ABSTRACT

Youth criminal behaviour has significant implications for both public safety and youth functioning; thus, effective methods to manage youth risk and promote rehabilitation are imperative. Risk assessment aims to assess the factors underlying a youth’s criminal behaviour in order to make informed decisions about risk management and intervention. However, risk assessment has been criticized for not considering protective factors (i.e., characteristics of the youth or his/her environment that reduce the likelihood of offending). There is limited research on individual characteristics of youth that act as protective factors for recidivism and results of available research are inconsistent, both of which limit the assessment of individual protective factors and their integration into risk assessment. The current dissertation focused on the role of individual protective factor domains in youth risk assessment. Research objectives included examining whether individual protective factors across personal, social, emotional, and cognitive domains predicted recidivism and whether these protective factor domains moderated the relationship between risk factors and multiple markers of recidivism. Participants included 173 youth (aged 12 to 18 years) who received a court-ordered risk assessment through the IWK Youth Forensic Services. Recidivism in the form of new charges was assessed over an average follow-up period of approximately seven years. A significant proportion of youth committed general (87%) and violent (65%) recidivism. Although gender and youth risk level were both significant predictors of general recidivism, higher cognitive ability was the only protective factor that emerged as a significant individual predictor of general recidivism. No support for a moderating effect of the protective factor domains was found. This study contributes to our understanding of the
relationship between individual protective factors and youth recidivism. Specifically, better cognitive ability is a promising protective factor for general recidivism. However, resiliency domains, at least as conceptualized and measured in the current study, were more consistent with specific responsivity factors than protective factors. These results have important implications for risk assessment and rehabilitative practices for justice-involved youth, including suggestions for how practitioners can best utilize protective factors as part of risk assessment and rehabilitative interventions.
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CHAPTER ONE: INTRODUCTION

A significant decline in the prevalence of crime committed by adolescents within Canada has been observed over the past decade, representing a 44% decrease between 2006 and 2016 (Keighley, 2017). The declining rate of youth crime also has resulted in reductions in the number of cases processed through Canadian youth courts and those involved with correctional services. Specifically, a 19% decline in completed youth court cases was observed between 2013/2014 and 2014/2015, including decreased rates of both violent (i.e., 18% decline) and property (i.e., 21% decline) offences (Miladinovic, 2016). Despite the lower rates of youth offending, a significant minority of Canadian youth become involved with the criminal justice system. Specifically, a total of 88,000 youth in Canada were accused of a criminal offence in 2016 (Keighley, 2017). This number includes youth formally charged of offences, those recommended for charging, and youth diverted from the criminal justice system through the use of means such as warnings or referral to community-based diversion programs. It has been estimated that approximately 6% of the Canadian youth population are involved in the criminal justice system (Public Safety Canada, 2012). In 2014, youth accounted for 13% of all individuals charged with a Criminal Code offence (Allen & Superle, 2016). Therefore, systems must be in place to effectively manage justice-involved youth and reduce future criminal involvement.

The Risk-Need-Responsivity model of offender rehabilitation (Andrews, Bonta, & Hoge, 1990) provides evidence-based guidelines for the management and provision of intervention for justice-involved youth. Effective implementation of these principles requires a comprehensive assessment of the youths’ risk level and factors related to their
criminal behaviour. Risk assessment allows for informed decisions to be made about the risk management and intervention strategies that will best address the causes underlying a youth’s criminal behaviour. A current limitation of youth risk assessment procedures and measures is that they are heavily focused on risk factors, despite an emphasis in the research literature that consideration of both risk and protective factors is imperative (e.g., Campbell, Schmidt, & Wershler, 2016; Hoge, 2008). Protective factors theoretically should be associated with the likelihood of recidivism and can be utilized in case planning (Efta-Breitbach & Freeman, 2004). However, existing risk assessment measures either do not include protective factors, or are limited in the protective factors they do include or how they are measured. Moreover, guidance for professionals on how to integrate risk and protective factors in risk conceptualizations and case planning is lacking. Thus, there is limited research available on the ability of protective factors to predict recidivism (i.e., re-offending) as part of risk assessment practices. The aim of the current dissertation is to investigate individual protective factors (e.g., emotional stability, cognitive abilities) in an Atlantic Canadian sample of justice-involved youth. The ability of these protective factors to predict recidivism and whether they exert a moderating effect on the relationship between risk factors and recidivism was investigated.

1.1 Justice-Involved Youth in Canada

Developmental considerations result in unique needs for adolescents in relation to their criminal behaviour and treatment within the justice system, warranting distinct legislation and justice system processes separate from those for adults. In recognition of this, the Youth Criminal Justice Act (YCJA; *Youth Criminal Justice Act*, 2003) was
enacted in 2003 and is the current Canadian legislation relevant to youth involved in the criminal justice system. The underlying principles of the YCJA are to protect the public, hold youth accountable for their actions, promote rehabilitation and reintegration of youth, and ensure that the rights of youth are upheld throughout the criminal justice process. The YCJA’s focus on rehabilitation stems from the notion that intervention to address the underlying causes of criminal behaviour should be provided in a timely manner and be delivered in a way that respects the individual characteristics of the youth.

In regards to the provision of sanctions, consequences imposed under the YCJA should recognize the diminished culpability of youth due to their developmental stage, be meaningful, and be proportionate to both the seriousness of the offence committed and the youth’s degree of responsibility. Furthermore, sentences imposed should be the least restrictive means necessary to protect the public and to achieve accountability. Punishment must be balanced with the need to promote rehabilitation and reintegration with the community. Custodial sentences should be used only in cases in which the youth cannot be effectively managed or rehabilitated in the community without significant risk to public safety (i.e., commission of serious violent offenses or failure to comply with community-based sanctions). Consistent with this aim, the majority of youth who are formally charged and convicted through the youth court system are managed in the community (Malakieh, 2017; Public Safety Canada, 2012). Specifically, in 2015/2016, 89% of youth involved in the Canadian criminal justice system were being supervised in the community (Malakieh, 2017). Furthermore, the rate of youth in
custody has been steadily decreasing since the implementation of the YCJA, including a

In considering the characteristics of justice-involved youth in Canada, males,
older adolescents, and Aboriginal youth are over-represented relative to the general
youth population. Males consisted of 77% of accused persons in youth court cases in
2014/2015 (Miladinovic, 2016) and 73% of admissions to custody (Malakieh, 2017). Older adolescents (i.e., 15 years of age or older) consisted of 86% of admissions into the
youth justice system in 2015/2016 (Malakieh, 2017), and 63% of youth court cases in
2014/2015 involved a 16- or 17-year-old accused (Miladinovic, 2016). Although
Indigenous youth represent only 7% of the youth population across surveyed
jurisdictions, they consisted of 35% of all correctional admissions and 39% of custody
admissions in 2015/2016 (Malakieh, 2017). In regards to the types of offences
committed by these youth, the majority (70%) of cases appearing before youth courts
are for non-violent offences, and the most common specific offences (in descending
order) are theft, common assault, break and enter, failure to comply, and mischief
(Miladinovic, 2016).

1.2 Causes and Trajectory of Youth Offending

The developmental taxonomic theory (Moffitt, 1993) posits that there are two
distinct categories of adolescents who engage in antisocial behaviour: 1) a group that
has an onset of this behaviour during childhood and a relatively continuous and severe
course that persists into adulthood (i.e., Life-Course-Persistent Pathway); and 2)
individuals whose offending begins in adolescence and desists as they enter adulthood
(i.e., Adolescent-Limited Pathway). Moffitt proposed that whereas Life-Course-
Persistent (LCP) offenders display a form of psychopathology developed from the interaction between neuropsychological deficits and experiences of various forms of adversity during childhood, the Adolescent-Limited (AL) group possess few risk factors. Rather, AL individuals are susceptible to negative peer influences during adolescence due to a “maturity gap” in which they are attempting to assert independence, and, therefore, engage in criminal behaviour when it is socially reinforced. Thus, antisocial activity during adolescence is conceptualized as being, to a certain degree, part of normative experience (Moffitt, 1993). Upon entering adulthood, it is expected that this reinforcement will decrease, thereby promoting desistance from adult antisocial activity for AL individuals (Moffitt, 1993). Although this model of youth offending was originally developed to describe male adolescents, it was later extended to include females as well. Moffitt and Caspi (2001) asserted that the LCP and AL categories, including their associated risk factors, are also representative of female youth involved in antisocial activities. Based on this theory, it is reasonable to assume that rehabilitation efforts should focus on youth with a childhood history of antisocial behaviour, because most AL individuals would be expected to desist without intervention.

Consistent with the developmental taxonomic theory, significant differences between LCP and AL individuals have been observed in longitudinal research, with the LCP group (10% of individuals) displaying a greater number of problems and worse functioning in early adulthood than those categorized as AL (Moffitt, Caspi, Harrington, & Milne, 2002). Specifically, when surveyed during young adulthood (i.e., age 26 years), LCP males displayed a pattern of more frequent and severe criminal behaviour, including committing significantly more violent offences as an adult than the AL group.
The LCP group also endorsed significantly more symptoms of Antisocial Personality Disorder than AL group members, and displayed significantly higher elevations in neurotic and callous traits (Moffitt et al., 2002). Furthermore, greater impairment in terms of higher rates of family and relationship problems, work conflict, and unemployment was also present for LCP individuals. On an overall composite index of adult adjustment problems, scored from 0 to 10 for presence of various problems (e.g., adult conviction for a violent offence, psychiatric diagnosis, long-term unemployment, partner abuse), individuals classified as LCP offenders had significantly more problems than all other individuals in the sample (Moffitt et al., 2002). Furthermore, four times more LCP than AL individuals scored in the high range (i.e., 7 to 10 problems), representing 70% of high scorers in the entire sample (Moffitt et al., 2002). The significant impairments present in young adulthood for those individuals who displayed persistent antisocial behaviour across childhood and adolescence emphasize that LCP youth require intensive intervention during adolescence to reduce risk and impairment in adult functioning.

Despite displaying better long-term outcomes than their LCP counterparts, AL individuals also have been found to display a variety of negative outcomes (e.g., mental health symptoms, substance dependence) in adulthood, albeit to a lesser degree than the LCP group (Moffitt et al., 2002). Outcome for AL individuals was poorer across most areas of functioning than for individuals without a history of antisocial activity; the AL group also had comparable rates of mental health disorders to LCP individuals, even displaying higher rates of impulsivity (Moffitt et al., 2002). Moreover, AL individuals, representing 26% of males, did engage in moderate levels of criminal behaviour in
adulthood, with 34% having been convicted of any adult offence ($M$ number of convictions = 3.5) and 14% having received violent adult convictions (Moffitt et al., 2002). Family and relationship problems was the sole domain for which AL individuals were comparable to non-offending individuals. Overall, the vast majority of the AL group displayed at least one adult adjustment difficulty, with approximately one-third having three or more problems present (Moffitt et al., 2002).

These difficulties in adult functioning are not fully consistent with predictions based on the developmental taxonomic theory, which would suggest that criminal behaviour should desist with age and AL individuals should display positive functioning in adulthood (Moffitt, 1993). Some of the observed adult adjustment difficulties may be due to youth experiencing “snares,” which refer to implications related to antisocial activity (e.g., school drop-out, teenage pregnancy, interrupted social development due to time spent in custody; Moffitt et al., 2002) that can persist into adulthood even if antisocial behaviour stops, negatively impacting adult functioning. These events can even create risk factors that increase the likelihood that the youth will continue offending past adolescence (e.g., exposure to antisocial peers). Although the magnitude of difficulties for AL individuals was not as large as that found for LCP individuals for most outcomes, the variety and severity of problems experienced by this group suggest that long-term impacts of adolescent antisocial behaviour are the norm and not the exception. Therefore, effective rehabilitation is also important for youth first displaying antisocial activity in adolescence, and efforts to divert youth from the criminal justice system may reduce the likelihood of them experiencing “snares,” thereby promoting positive outcomes.
Further complicating the classification of adolescents who engage in criminal behaviour, the LCP and AL groups do not describe most individuals, and in fact, 51% of Moffitt and colleagues’ (2002) sample remained unclassified. Furthermore, additional trajectories have commonly been observed in longitudinal studies, with three to five being most common (Piquero, 2008). Several studies have identified a “late-onset chronic” group, who do not first engage in criminal activity until mid- to late-adolescence, but continue offending into adulthood (Piquero, 2008). In a Canadian sample of adjudicated youth followed for an average of 16.4 years from late childhood/early adolescence into adulthood, Day et al. (2012) found seven distinct trajectories. For example, the “low persister” group, comprising 32% of the sample, engaged in criminal activity throughout adolescence and adulthood, but at a relatively low rate.

Moffitt et al. (2002) also identified two additional groups of individuals in adulthood, aside from AL and LCP. Individuals who displayed severe antisocial behaviour during childhood (i.e., comparable to the LCP group) but only engaged in moderate levels of offending behaviour during adolescence were originally labelled “recoverers” (Moffitt, 1993). However, in early adulthood, members of this group engaged in moderate levels of criminal activity, with approximately one-quarter (28%) having been convicted of adult offences, suggesting a more chronic, intermittent course of low-level antisocial activity (Moffitt et al., 2002). In addition to continued criminal behaviour, members of the recovery group displayed significant mental health difficulties, specifically in regards to experiencing symptoms of depression and anxiety, as well as significant levels of social isolation and neuroticism (Moffitt et al., 2002).
Overall, these individuals displayed problems with adjustment in adulthood; 85% had at least one adult adjustment problem, and the recovery group experienced significantly more problems than individuals not engaged in adult criminal activity, although significantly fewer problems than LCP individuals (Moffitt et al., 2002). In contrast, “abstainers” (i.e., individuals who avoided engagement in antisocial activity throughout childhood and adolescence) continued to engage in little antisocial activity in adulthood and generally displayed positive outcomes across domains of life (Moffitt et al., 2002). Abstainers tended to have low rates of mental health diagnoses, and the vast majority were rated as having one or fewer adult adjustment problems (Moffitt et al., 2002). Both of these groups were relatively uncommon among males, with 8% of participants falling into the recovery category, and 5% classified as abstainers (Moffitt et al., 2002). Another cluster that has been found to be quite common in other research is childhood-limited antisocial behaviour, in which children who display antisocial behaviour as children outgrow this behaviour by adolescence (Fairchild, van Goozen, Calder, & Goodyear, 2013).

To summarize, longitudinal research on the trajectory of youth criminal behaviour suggests that even when criminal behaviour is relatively limited to the period of adolescence, longer-term impairments in functioning may be observed. In fact, Fairchild and colleagues (2013) explained that “adolescence-limited” antisocial activity appears to be relatively rare; thus, describing this as the most common outcome out of criminal behaviour beginning in adolescence is misleading. Furthermore, perpetuation of this label may actually be harmful to youth, because it may limit their ability to access effective intervention to address the underlying causes for their behaviour. In
addition, Day et al. (2012) highlighted that most individuals are classified as “non-offenders” in community samples, so adolescent criminal activity is not as common as the developmental taxonomic theory implies.

As a result of contradictory findings, the validity of the developmental taxonomic theory has more recently been questioned, with a revision being proposed. Based on a comprehensive review of the research literature on this topic, Fairchild et al. (2013) concluded that the differences between individuals with child-onset and adolescent-onset antisocial behaviour are best described as *quantitative*, rather than the *qualitative* differences described by Moffitt (1993). A reconceptualization, in which individual vulnerabilities are moderated by both childhood experiences and environment, better represents the research on youth offending (Fairchild et al., 2013). Thus, for youth with a greater number of vulnerabilities, those without supportive environments are likely to engage in criminal behaviour at an earlier age, whereas the presence of these environments may exert a buffering effect and delay onset of antisocial activity in other youth.

Based on this interaction effect, five clusters of youth have been described by Fairchild and colleagues: (1) normative experimentation (i.e., behaviour that would not meet diagnostic criteria for Conduct Disorder); (2) adolescence-limited; (3) adolescence-onset persistent; (4) childhood-limited; and (5) childhood-onset persistent. These clusters differ across the dimensions of individual risk and environmental risk, with environmental risks (e.g., childhood maltreatment, poor parental monitoring) more associated with earlier age of onset and individual risks (e.g., decreased cortisol reactivity, impaired fear processing) related to greater persistence of behaviour.
Youth engaging in “normative experimentation” are theorized to have low environmental and individual risk (Fairchild et al., 2013). This revised model also better reflects the understanding that causes of adolescent offending are “the result of a complex interaction of individual propensities, situations, close interpersonal relationships, institutions, culture, and social influences” (Guerra, Kim, & Boxer, 2008, p. 89). Therefore, it is imperative to assess the environmental and individual risk factors for each individual, rather than relying on a categorical system to inform risk management and intervention. It is through this individual focus that underlying causes of behaviour can be effectively targeted to reduce the likelihood of further criminal behaviour and promote positive functioning in adulthood.

1.3 Youth Recidivism

It is important to consider what is currently known about youth recidivism, both in terms of how often youth do commit further criminal behaviour, as well as youth characteristics associated with re-offending. Estimates of the prevalence of youth recidivism have varied across studies, due to differences in sample risk level (e.g., low vs. high risk), setting (e.g., custodial vs. community), or demographic characteristics (e.g., gender, type of offending, age). In addition, use of different follow-up periods results in disparate estimates, with higher rates of recidivism typically found over longer follow-up periods. Overall, general recidivism (i.e., any form of re-offence) tends to be quite common in youth samples, with recent Canadian studies reporting recidivism rates of 63 to 74% (Olver, Stockdale, & Wong, 2012; Schmidt, Sinclair, & Thomasdóttir, 2016; Wershler, Campbell, & Dyck, 2018). These rates are higher than that typically found in adult samples (e.g., Dyck, Campbell, & Wershler, 2018; Smith & Gendreau,
2007). Over an average 10 year follow-up period, Schmidt, Campbell, and Houlding (2011) found that 65% of youth participants re-offended, with 52% committing at least two new offences. Rates of re-offending are typically lower when technical violations (e.g., breaches of conditions) are excluded, as these are quite common charges for youth, but do not represent further criminal activity. For instance, Wershler and colleagues (2018) found that 56% of community-supervised youth committed either new violent or non-violent offences, compared to 70% when technical violations were included. Examining specific types of recidivism highlights that non-violent re-offending is much more common than violent recidivism, regardless of the nature of the index offence (i.e., violent, non-violent, sexual). Whereas non-violent recidivism rates of 45 to 71% have been found in recent Canadian studies, only 29 to 47% of youth in these samples committed violent recidivism (Olver et al., 2012; Schmidt et al., 2011, 2016; Wershler et al., 2018).

The length of time before recidivism occurs has also been used as an outcome, particularly for examining predictive accuracy of risk classifications. This variable represents the time the youth has spent in the community, excluding time spent in custody. Research has consistently found that higher risk youth commit new offences significantly more quickly than lower risk youth (Olver et al., 2012; Schmidt et al., 2011; Wershler et al., 2018). Across risk levels, significant variability in average time to first recidivism event has been found, ranging from 184 days (Schmidt et al., 2016) to 621 days (Schmidt et al., 2011). Examinations of time to recidivism are particularly relevant in considering a harm reduction approach to youth offending; rehabilitation efforts may be considered successful if they prolong the period of time a youth can
remain in the community without engaging in criminal behaviour. There is no evidence to suggest that different factors predict likelihood of recidivating generally compared to the length of time prior to recidivism, but smaller effects may be more readily detected by examining time to recidivism.

Relatively less attention has been paid to the impact of demographic factors on rates of recidivism. In regard to gender, there are conflicting results in the research literature, with comparable recidivism rates found for males and females in some studies (Asscher, Van der Put, & Stams, 2015; Meyers & Schmidt, 2008; Wershler et al., 2018) and others finding significantly higher recidivism rates for males (Anderson et al., 2016; Lodewijks, de Ruiter, & Doreleijers, 2008; Nicholls, Cruise, Greig, & Hinz, 2015; Thompson & McGrath, 2011). Even fewer studies have examined ethnic differences in youth recidivism rates, particularly in Canada. In both Australia (Thompson & McGrath, 2011) and the United States (Vincent, Chapman, & Cook, 2011), ethnic differences in recidivism rates have been found, with Indigenous and Hispanic youth more likely than Caucasian youth to re-offend, respectively. In contrast, in a Canadian sample, Wershler et al. (2018) did not find significant differences in rates of recidivism between Caucasian and non-Caucasian youth.

Although the majority of Canadian justice-involved youth are older adolescents (i.e., 15 to 17; Miladinovic, 2016), differences in recidivism rates across adolescent age have not previously been examined. In adults, index offence characteristics (i.e., offence type and severity) have not been found to be associated with recidivism (e.g., Bonta & Andrews, 2017). However, this relationship has not been examined in youth samples, and it cannot be assumed that the results found for adult offenders would be consistent
for justice-involved youth. Thus, further investigation of the relationship between specific demographic and descriptive factors and youth recidivism rates is needed.

1.4 Effective Risk Management of Justice-Involved Youth

The YCJA clearly advocates for the provision of rehabilitative interventions for youth involved in the criminal justice system. Furthermore, it is clear that criminal justice system involvement during adolescence can have long-term negative impacts on youth outcome and functioning if underlying causes of offending are not adequately addressed. However, the YCJA does not provide guidance on how interventions should be designed to maximally reduce the likelihood of further offending, a key goal from both public safety and rehabilitation perspectives. In addition, due to the complexity and variability in underlying causes of criminal behaviour, effective management must consider individual characteristics and needs. It is in this regard that theoretical models of offending behaviour and rehabilitation can significantly contribute to understanding a youth’s criminal behaviour and engaging in intervention planning.

Accumulating research evidence demonstrates that rehabilitative, as opposed to punishment-based strategies, are most effective at reducing criminal behaviour (Andrews & Bonta, 2010). Andrews and Bonta (2010) highlighted that the design of the criminal justice system prevents punishment from being delivered effectively, thereby limiting its ability to influence behaviour change. Specifically, punishment must be immediate, consistent, guaranteed, and proportional. However, this is not possible when: there are relatively long delays between the criminal act and the administration of punishment; there is variation in the level of punishment that is applied; and the majority of criminal behaviour is not detected (Andrews & Bonta, 2010). There is no clear
evidence that punishment through the criminal justice system leads to any reductions in recidivism (Bonta & Andrews, 2017; Cullen, Jonson, & Nagin, 2011), including for youth (McGrath & Weatherburn, 2012). In addition, evidence-based rehabilitation interventions are not any more expensive to administer than either punishment through formal sanctions or ineffective intervention programs (Romani, Morgan, Gross, & McDonald, 2012).

When considering that effective intervention reduces recidivism, thereby reducing future costs, there is a significant cost-benefit to providing effective rehabilitation programming (Romani et al., 2012). Overall, the research evidence provides a sufficient rationale to support criminal justice policy promoting evidence-based rehabilitation efforts and minimizing a focus on punishment. A model of rehabilitation that has received considerable research support and is the predominant model in use in Canada is the Risk-Need-Responsivity model of effective offender case management and supervision.

1.5 The Risk-Need-Responsivity Model

As proposed by Andrews and colleagues (1990), the Risk-Need-Responsivity (RNR) model outlines the components necessary for effective supervision and rehabilitation of criminal behaviour. The RNR model was designed to assist decision makers with case planning by informing the nature and type of appropriate services for a specific offender that will maximize reductions in recidivism. This model does this by outlining important considerations in the design and delivery of effective rehabilitation programs. The RNR model is situated within the Personal, Interpersonal, and Community Reinforcement (PIC-R) theoretical perspective, which draws from
personality and cognitive-social-learning theory to posit that behaviour is influenced by multiple sources (i.e., personal, interpersonal, and reinforcement history), and that repeated associations with stimuli, in combination with motivations and controls, regulate behavioural responses (Andrews & Dowden, 2007).

Based on this theoretical foundation, the RNR model recognizes that behaviour change (i.e., reduced offending) requires a consideration of multiple contexts (e.g., family, interpersonal relationships, school/work) as causes and contributors to criminal behaviour. In addition, reducing reinforcement for antisocial acts while simultaneously increasing reinforcement for prosocial behaviour should be a primary goal of rehabilitation planning. Originally proposed with three main principles (Andrews, Bonta et al., 1990), the RNR model has grown to include a total of 15 different principles, which can be grouped into the categories of: overarching principles; core principles; key clinical issues; and organizational principles (Andrews & Dowden, 2007; Bonta & Andrews, 2017). An overview of each of these categories will be presented, although the primary focus remains on the core principles of Risk, Need, and Responsivity (General and Specific), each of which will be discussed in detail. The additional 11 principles outline the necessary and/or optimal conditions for rehabilitative programming that focuses on the core principles to be delivered.

1.5.1 **Overarching principles.** The overarching principles of the RNR model emphasize that any rehabilitative program should have as its basis an empirically supported theoretical model (i.e., *psychological theory* principle) and be delivered using a human service model that respects the person and his/her context (Andrews & Dowden, 2007; Bonta & Andrews, 2017). As mentioned, the RNR model is situated
within the PIC-R theory of criminal behaviour, but other personality and social learning approaches also may be appropriate. The rationale for the psychological theory principle is that an understanding of why criminal behaviour occurs is required to effectively modify this behaviour long-term by addressing underlying causal factors (Andrews & Dowden, 2007). The human service and respect for the person principles specify that a necessary condition for programs designed for rehabilitation purposes is that they must be delivered through human interaction and be delivered in a manner that communicates respect for the person, including his/her personal well-being (Bonta & Andrews, 2017). Although this may seem obvious, this principle emphasizes a key distinction from punishment-based ideas which view sentencing as sufficient for rehabilitation to occur (Andrews & Dowden, 2007). Introducing the human service principle alone (i.e., any form of rehabilitation program rather than pure punishment) is actually associated with a modest decrease in recidivism ($r = .12$; Bonta & Andrews, 2017), representing a small effect ($\eta^2 = .37$; Dowden & Andrews, 2000).

**1.5.2 Core principles.** The three core principles of the RNR model, Risk, Need, and Responsivity (separated into General and Specific Responsivity components) guide rehabilitative intervention decision-making and delivery by prescribing who should receive what intensity of resources (Risk principle), what should be targeted for intervention (Need principle), and how intervention should be delivered (Responsivity principle).

**1.5.2.1 Risk principle.** The Risk principle can be conceptualized as specifying the intensity of resources that should be provided to an individual, based on the estimated likelihood that they will re-offend without supervision or intervention.
Individuals who are determined to be of higher risk to re-offend should receive a higher intensity of service and supervision than those who are of lower risk (Andrews, Bonta et al., 1990). In fact, low risk offenders may require only minimal or even no supervision/intervention (Andrews, Bonta et al., 1990). Intensity is relevant in terms of both management (e.g., higher level of security in institutions, increased level of community monitoring) and intervention (e.g., greater number of hours of intervention, more intensive rehabilitation programs). As highlighted by Hoge (2008), the benefit of the Risk principle is that it “helps ensure that we concentrate our resources on cases really in need of intervention, and further, encourages us to avoid over-involvement in the lives of lower-risk youth” (p. 55).

Research on the Risk principle has consistently found that an intensive level of service is required to change criminal behaviour in high risk individuals (Bonta & Andrews, 2017), and that when intervention is of sufficient intensity, it is actually most effective with those at higher risk (Andrews & Bonta, 2010). Larger effect sizes for higher risk individuals can be understood by recognizing that these individuals have more room for improvement than a lower risk individual, so a greater degree of change is possible. Lowenkamp, Latessa, and Holsinger (2006) found that, across 97 correctional programs, only those programs that adhered to risk principles (i.e., targeted high risk individuals, were of sufficient intensity) significantly reduced recidivism. Similarly, a meta-analysis of 374 effect sizes from 225 studies found significantly higher effect sizes for the risk principle in high risk samples ($d = .03$ for low risk and .10 for high risk; Andrews & Dowden, 2006). It should be noted that these results may actually underestimate the effects of the risk principle, as many studies classified risk
based on the majority of the sample rather than on individual risk level (Andrews & Dowden, 2006).

This research evidence conflicts with the common practice of offering consistent supervision or intervention intensity, regardless of risk level (Andrews & Dowden, 2006; Bonta, Rugge, Scott, Bourgon, & Yessine, 2008; Campbell, Dyck, & Wershler, 2014; Lowenkamp et al., 2006; Vincent, Paiva-Salisbury, Cook, Guy, & Perrault, 2012). To emphasize the importance of not over-intervening with low risk cases, it has been demonstrated that intensive services, at best, had no effect on outcome in low risk cases, and at worst, resulted in significantly higher rates of recidivism than if these individuals had received low intensity service (Andrews, Bonta et al., 1990; Bonta & Andrews, 2017; Lovins, Lowenkamp, Latessa, & Smith, 2007; Lowenkamp & Latessa, 2004).

Supporting the principle of Human Service, sanctions alone have no effect on recidivism (Andrews & Dowden, 2006). The effect of the Risk principle is stronger among female offenders compared to males, and among youth offenders compared to adults (Andrews & Dowden, 2006). However, the Risk principle has been supported across custodial and community contexts and across ethnicities (Andrews & Dowden, 2006). Although the Risk principle is often considered primarily in terms of making decisions about how an offender will be managed (i.e., custody vs. community supervision), it also has clear implications for case planning and intervention (Andrews & Dowden, 2006; Campbell et al., 2016). It is imperative that risk be assessed as part of the decision-making process for justice-involved individuals, and that this assessment be conducted by appropriately trained individuals using valid methods (Andrews & Bonta, 2010). Due to the potential for negative influence on lower risk individuals, high and
low risk offenders should not be placed together in intervention programs or institutional settings (Andrews & Bonta, 2010). In addition, low risk individuals should not be referred to intensive rehabilitation programs (Andrews & Dowden, 2007); this is not a cost-effective use of resources and is not in the best interest of the individual.

Within settings in which the population is more homogenous in terms of risk level (e.g., youth custodial settings), the Risk principle may be less relevant for resource allocation (Hoge, 2008). It also should be emphasized that, in terms of intervention, the Risk principle alone cannot be effective unless the services provided are consistent with the RNR principles of Need and Responsivity (Andrews & Dowden, 2006); a high-intensity program of poor quality will not reduce criminal behaviour.

1.5.2.2 Need principle. The Need principle specifies the risk factors to be targeted in intervention to reduce criminal behaviour. A risk factor has been described as “a measurable characteristic in a group of individuals or their situation that predicts negative outcome on a specific outcome criterion” (O’Dougherty Wright & Masten, 2006, p. 19). In other words, a risk factor, when present, increases the likelihood of a negative outcome. When considering the specific negative outcome of youth offending, the presence of risk factors would make it more likely that the youth would engage in criminal behaviour. Risk factors can be of an individual (e.g., temperament) or environmental/situational (e.g., living in a high crime neighbourhood, parental involvement in criminal activity) nature, and can occur across biological (e.g., genetic influence), psychological (e.g., antisocial attitudes) or social (e.g., family conflict) domains.
In general, risk factors that are persistent and/or pervasive across areas of the youth’s life often have a stronger impact (Goldstein & Brooks, 2006). Furthermore, the presence of multiple risk factors increases the likelihood of negative outcome, and may actually demonstrate cumulative effects (Goldstein & Brooks, 2006; O’Dougherty Wright & Masten, 2006). Risk factors interact with each other, such that biological or temperamental factors interact with environmental factors to produce the behavioural expression of these predispositions, and environmental factors can influence each other (Bonta & Andrews, 2017).

In identifying intervention targets, a distinction is made between criminogenic needs (i.e., factors that are directly related to offending) and non-criminogenic needs (i.e., factors that are not predictive of antisocial activity). Criminogenic needs, as opposed to non-criminogenic needs, should be the key targets of intervention, because most of these factors are dynamic (i.e., able to change). By altering these dynamic factors, interventions should be maximally effective in reducing criminal behaviour (Andrews & Bonta, 2010; Andrews, Bonta et al., 1990). “Criminogenic needs” refer to the Central Eight factors (e.g., procriminal attitudes, antisocial personality/behaviour) that have been identified through meta-analyses to be most closely associated with criminal behaviour (Bonta & Andrews, 2017; Dowden & Andrews, 1999; Gendreau, Little, & Goggin, 1996; Hanson & Morton-Bourgon, 2005; Simourd & Andrews, 1994). These factors are predictive of both initial engagement in criminal behaviour and recidivism (Bonta & Andrews, 2017).

In contrast to the Central Eight, needs such as emotional distress, low intelligence, socioeconomic status, presence of a mental disorder, low self-esteem, and
physical health concerns have been shown to have no relationship with future criminal behaviour (Andrews & Dowden, 2007; Bonta & Andrews, 2017; Bonta, Blais, & Wilson, 2014; Dowden & Andrews, 1999). In fact, a recent study found that youth with mental health difficulties were significantly less likely to recidivate than individuals without mental health symptoms (Mulder, Brand, Bullens, & Van Marle, 2010). Thus, factors such as these are referred to as non-criminogenic or minor needs. Although there is a place for non-criminogenic needs in intervention efforts (see Specific Responsivity section below), the main focus of rehabilitation must be on criminogenic needs (Bonta & Andrews, 2017).

Criminal history is the only semi-dynamic criminogenic need (i.e., it can increase, but not decrease) and refers to a pattern of previous criminal behaviour considering both the number and variety of acts, such as history of custodial sentences and supervision violations. It recognizes that past behaviour is typically a strong indicator of future behaviour, and that earlier onset of antisocial activity and the number and variety of offences suggest higher risk (Bonta & Andrews, 2017; Borum, Bartel, & Forth, 2002). Criminal history consistently has been a strong predictor of youth recidivism (e.g., Borum, 2000; Cottle, Lee, & Heilbrun, 2001; Mulder et al., 2010; Pearl, Ashcroft, & Geis, 2009; Schmidt et al., 2011). The remaining criminogenic needs can be categorized into those associated with the youth’s social context, family environment, and individual characteristics.

1.5.2.2.1 Social environment. School, peer groups, and leisure/recreation activities are highly influential aspects of a youth’s social environment, so when these influences are negative in nature, they can increase risk for criminal behaviour. Broader
social factors relating to the community in which the youth resides (i.e., high rates of crime, unstable and transitory residents, availability of drugs) also have been identified as relevant risk factors in the social environment (e.g., Borum, 2000; Viljoen, Cruise, Nicholls, Desmarais, & Webster, 2012), but there is currently less evidence for their ability to predict recidivism, so they are not one of the Central Eight needs. The education/employment criminogenic need relates to whether the individual attends school or is employed, as well as performance and satisfaction in these settings. For youth, school functioning (i.e., attendance, performance, engagement) is often the primary focus of this need area instead of employment, unless the youth is not in school. The research literature reflects this emphasis and has typically investigated the relationship between school factors and recidivism. It has been found that poor quality relationships in the school setting (i.e., teachers, peers), low level of engagement with school, behavioural difficulties at school, and poor achievement (i.e., below the level that would be expected based on cognitive ability) all increase risk for engagement in criminal behaviour (Bonta & Andrews, 2017; Borum, 2000; Hoge & Andrews, 2002). Although associations between these educational risk factors and recidivism typically have been supported by research (e.g., Bonta & Andrews, 2017; Flores, Lawrence, & Latessa, 2004; Schmidt et al., 2011; Simourd & Andrews, 1994), the meta-analysis conducted by Cottle et al. (2001) found no significant impact of school attendance or achievement on recidivism outcomes.

In regard to peer relationships, the procriminal associates criminogenic need recognizes that interaction with antisocial peers is a robust risk factor for criminal activity, particularly when the youth’s close friends have been involved in the criminal
justice system, engage in substance use, and/or display antisocial attitudes or behaviours (Bonta & Andrews, 2017). Bonta and Andrews (2017) refer to procriminal peer groups as providing “social support for crime”, through perpetuating and encouraging antisocial attitudes and behaviour. In addition, lack of prosocial peer relationships also increases risk, due to both a lack of positive peer role models and increased social isolation, which can increase susceptibility to negative influences (Bonta & Andrews, 2017; Hoge & Andrews, 2002). Numerous studies have found support for antisocial peer relationships as a risk factor for engaging in offending (Cottle et al., 2001; Rowe, 2002; Schmidt et al., 2011).

How youth spend their free time is also related to criminal behaviour. A lack of involvement in structured, prosocial leisure activities (e.g., sports teams) or lack of engagement in prosocial interests or hobbies indicates a leisure/recreation need (Bonta & Andrews, 2017; Hoge & Andrews, 2002). Unoccupied free time may be filled with unproductive or antisocial activities, and too much time spent on unconstructive activities (e.g., watching TV, video games) can limit exposure to prosocial peers and potentially impact functioning in positive domains (Hoge & Andrews, 2002). Leisure/recreation has received less research attention as a potential risk factor for youth offending and studies that have examined this factor offer mixed results. Some research (e.g., Cottle et al., 2001; Rowe, 2002) has found significant associations between poor use of leisure/recreation time and recidivism, whereas others have not (e.g., Flores et al., 2004). Schmidt et al. (2011) found that leisure/recreation was a significant risk factor in male youth, but not for female youth, which may help explain some of the variability across studies.
1.5.2.2.2 Family. The criminogenic need of family/marital functioning recognizes the strong influence that the family environment can have on behaviour. For youth, the focus is primarily on the relationship with parents, specifically in terms of the absence or inconsistency of nurturing or caring relationships as well as inappropriate monitoring and supervision of the youth (Bonta & Andrews, 2017; Hoge & Andrews, 2002). Thus, family factors have been a major focus of the youth risk factor research literature, with results consistently demonstrating that family problems increase youth’s risk of engaging in criminal behaviour (Carr & Vandiver, 2001; Cottle et al., 2001; Gendreau et al., 1992, as cited in Bonta & Andrews, 2017; Hoge, Andrews, & Leschied, 1996; Mulder et al., 2010). Exposure to violence/conflict in the home and parental engagement in criminal behaviour have also been highlighted as risk factors (Borum, 2000). In regards to aspects of family relationships, poor relationships between the youth and both parents, a low level of family cohesion, and poor communication among family members increase youth’s risk (Hoge et al., 1996). Research that has examined both negative relationship factors (i.e., parent-child relationships characterized by low nurturance/caring and/or high conflict) and parent behaviours (i.e., providing inadequate level of supervision, use of inappropriate or ineffective parenting strategies) has found that these family/parenting factors increase risk of recidivism (Flores et al., 2004; Rowe, 2002; Schmidt et al., 2011).

1.5.2.2.3 Individual characteristics. Other risk factors represent individual youth characteristics, including biological predispositions, temperamental characteristics or personality features, psychological symptoms or diagnoses, and behaviours. In regards to biological vulnerabilities, there is significant evidence for decreased cortisol
reactivity to stress, as well as impairments in executive functioning, emotion recognition and reactivity, and fear conditioning in youth with conduct problems (Fairchild et al., 2013). Other individual characteristics represent more direct risk factors as opposed to vulnerabilities. The criminogenic need of antisocial attitudes/orientation describes the presence of attitudes, values, beliefs, and rationalizations that endorse antisocial activity (e.g., negative attitude towards criminal justice system, belief that victims of crime deserved what happened to them, lack of empathy for others) as well as the individual having adopted a “criminal” identity (Bonta & Andrews, 2017; Hoge & Andrews, 2002). Antisocial attitudes also include negative beliefs and attitudes towards intervention and authority (Hoge & Andrews, 2002). These cognitions often promote emotional states of anger, resentment, and defiance, thereby lowering inhibitions for engaging in offending. Presence of antisocial attitudes/orientation has generally shown robust associations with youth criminal behaviour (Bonta & Andrews, 2017; Borum, 2000; Rowe, 2002; Schmidt et al., 2011; Simourd & Andrews, 1994). Callous-unemotional traits, which also are predictive of youth offending (e.g., Edens, Campbell, & Weir, 2007; Schmidt et al., 2011) are associated with this risk factor.

The antisocial personality/behaviour and substance abuse criminogenic needs reflect youth characteristics and behaviours that increase risk for offending. Antisocial personality describes an individual who is aggressive, callous, thrill-seeking, and disagreeable in personality orientation; this is often present in combination with lower self-control abilities (e.g., impulsivity, behavioural inhibition). Specific behavioural characteristics associated with criminal behaviour in youth include: impulsivity, sensation seeking, verbal and physical aggression, short attention span, poor frustration
tolerance, and lack of accountability for actions (Bonta & Andrews, 2017; Hoge & Andrews, 2002). Although these characteristics are quite diverse, and youth may display some but not others, a pattern of behaviour characterized by these factors is associated with youth engagement in antisocial behaviour (Bonta & Andrews, 2017; Borum, 2000; Cottle et al., 2001; Edens et al., 2007; Mulder et al., 2010; Rowe, 2002; Schmidt et al., 2011; Simourd & Andrews, 1994).

A substance abuse need refers to the abuse of alcohol, any illicit drug, or inappropriate use of prescription drugs. For youth, the misuse of substances (i.e., problematic use of alcohol and/or drugs), even if criteria for a substance use disorder are not met, represents a criminogenic need. Particular attention is paid to the relationship between use of substances and engagement in antisocial activities. Substance misuse, particularly when use of a substance is associated with criminal behaviour (e.g., theft to obtain money for drugs, only engaging in antisocial behaviour when under the influence), is a risk factor for youth offending (Borum, 2000; Flores et al., 2004; Cottle et al., 2001; Schmidt et al., 2011).

1.5.2.2.4 Need principle and recidivism. Examining the overall relationship between the Central Eight and recidivism in a descriptive summary of eight meta-analyses across adult and youth justice-involved populations, Bonta and Andrews (2017) found the Central Eight to be moderately associated with recidivism in youth ($r = .52$), demonstrating stronger effects than in adults. Furthermore, directly targeting criminogenic needs leads to reductions in recidivism; Dowden and Andrews (2000) found a moderate effect of programs that target criminogenic needs for reducing recidivism ($\eta^2 = .59$). Similarly, Lowenkamp and colleagues (2006) found that treatment
targeting criminogenic needs reduced recidivism an average of 11% compared to an increase in recidivism of 3% for programs targeting non-criminogenic needs. Among community-supervised youth, matching identified criminogenic needs to interventions was associated with significantly lower rates of recidivism and a longer time before first re-offence (Vieira, Skilling, & Peterson-Badali, 2009). Meta-analytic results also support the Need principle, with programs that target criminogenic needs demonstrating significantly larger effect sizes for reducing recidivism than programs addressing non-criminogenic needs (Smith, Gendreau, & Swartz, 2009).

The Central Eight factors are predictive of criminal behaviour for both male and female youth (Bonta & Andrews, 2017). However, a limitation of the youth risk factor literature is that the studied samples are often composed predominantly of males. Although risk factors for offending are generally consistent across male and female youth, gender variations in the strength of associations between risk factors and criminal behaviour commonly have been found (e.g., Gammelgård, Weizmann-Henelius, Koivisto, Eronen, & Kaltiala-Heino, 2012; Schmidt et al., 2011; Thompson & McGrath, 2011). For instance, Gammelgård et al. (2012) found that history of violence and poor coping skills were the strongest predictors of violence for female youth, whereas antisocial personality and antisocial attitudes were most predictive for male youth. In addition, there may be gender differences in the prevalence of various factors (i.e., experiences of victimization, mental health diagnoses) that, although not direct risk factors, should be considered as Specific Responsivity considerations (e.g., Asscher et al., 2015; Odgers, Burnette, Chauhan, Moretti, & Reppucci, 2005).
1.5.2.2.5 Need principle and case planning. A clear link exists between the Need principle and case planning; an assessment of criminogenic needs identifies those risk factors that are present and relevant for that particular individual, and therefore must be addressed in the intervention plan. In individual intervention, case planning should focus only on criminogenic needs present for that individual. This reflects the numerous ways in which youth become involved in the criminal justice system, thereby presenting with varied needs requiring distinct approaches (Guerra et al., 2008). This is more challenging when group programming is provided, but these interventions should focus on targeting one or more criminogenic factors. It is concerning, however, that many rehabilitation programs that have been included in meta-analyses are predominantly focused on addressing non-criminogenic needs (e.g., Smith et al., 2009), likely reflecting clinician and administrator misperceptions that non-criminogenic needs are related to criminal behaviour. The Need and Risk principles interact in that higher risk offenders are more likely to have a greater number of criminogenic needs; therefore, intervention for these individuals will also need to be more intensive in terms of providing multiple interventions or providing programs that target a wider range of needs (Andrews & Bonta, 2010).

Andrews and Dowden (2007) and Bonta and Andrews (2017) have provided recommendations in terms of how to address each criminogenic need. Although an individual’s criminal history cannot be changed, individuals with a high need in this area will require greater attention to creating a repertoire of prosocial behaviours as alternatives to engaging in antisocial acts. Procriminal attitudes should be modified using cognitive restructuring, whereas problem-solving and affect regulation skill-
building can help address antisocial personality. Time spent with procriminal associates should be decreased, while relationships with prosocial individuals should be enhanced. Family or couples therapy may be used to increase positive family or romantic relationships and reduce conflict. Parent training can be used to increase parents’ skills for effectively supervising and monitoring their child’s activities. Employment training or services can help individuals receive skills and resources necessary to gain and maintain employment, and education intervention or upgrading can improve engagement and achievement at school. Enhancing participation and engagement in prosocial recreational or volunteer activities can address the leisure/recreation need. Finally, substance abuse interventions and promoting alternative coping methods can be used for individuals using or abusing substances. If individuals are to be referred to other organizations or professionals to receive intervention, communication in terms of the specific criminogenic needs to be addressed is imperative.

1.5.2.3 Responsivity principle. The Responsivity principle is concerned with the delivery of intervention. This refers to both the general treatment approaches used and the tailoring of intervention to maximize the individual’s response to criminogenic-focused intervention. It consists of two specific principles: General Responsivity and Specific Responsivity.

1.5.2.3.1 General Responsivity. The principle of General Responsivity relates to the characteristics of effective interventions for reducing recidivism. It posits that evidence-based treatment should be provided in the context of a positive therapeutic relationship (Andrews & Bonta, 2010). This is consistent with the current emphasis on evidence-based practice within psychology and mental health more broadly, which
emphasizes that psychological treatment should be provided based on the techniques that have research support demonstrating their effectiveness (e.g., Lilienfeld, Ritschel, Lynn, Cautin, & Latzman, 2013). Although there is relatively less research specifically focusing on effective interventions for criminogenic needs, as compared to psychological disorders such as depression or anxiety, cognitive behavioural interventions and those based on principles of social learning (i.e., modeling, reinforcement) have been found to be most effective (Andrews & Bonta, 2010).

For example, Smith et al. (2009) concluded that, across meta-analyses, cognitive behavioural interventions have consistently shown greater effects for recidivism reduction than other treatment approaches. The value of cognitive behavioural interventions is that they can directly target and change antisocial cognitions (Guerra et al., 2008), which, as discussed in the Need Principle section above, are strongly associated with criminal behaviour. Formally recognized evidence-based interventions for targeting antisocial behaviour in justice-involved youth also include functional family therapy, multisystemic therapy, and multidimensional foster care, whereas aggression replacement training is a promising approach that needs more research (Guerra et al., 2008).

1.5.2.3.2 Specific Responsivity. In contrast, the principle of Specific Responsivity refers to how interventions should be individualized based on the specific needs and characteristics of the individual (Andrews & Bonta, 2010). The consideration of individual needs and factors is also highlighted more broadly as a component of evidence-based practice in psychological and mental health services (Lilienfeld et al., 2013). It is within the principle of Specific Responsivity that non-criminogenic needs
fit; although these factors are not typically directly associated with criminal behaviour, they may be indirectly associated with offending via relationships with criminogenic needs. For example, if an individual is engaging in substance misuse to cope with depressive symptoms, then the non-criminogenic need of depression will need to be incorporated into the individual treatment plan to more effectively target substance use. Thus, non-criminogenic needs may create vulnerability to criminogenic need influences. Promoting the overall functioning and well-being of justice-involved youth should be an additional goal of any intervention, and although non-criminogenic needs should not be the main focus of intervention nor prioritized over targeting criminogenic needs, they can still be addressed as part of treatment.

Specific Responsivity factors may also play an important role in preparing individuals for treatment and/or engaging them in intervention. For instance, addressing destabilizing factors (e.g., homelessness) that are present in a youth’s life may be necessary before he/she can focus on intervention. In addition, readiness/motivation to change is a critical consideration. Youth may benefit more from intervention if efforts to engage them are implemented at the beginning of treatment. In this regard, Motivational Interviewing (Miller, 1983; Miller & Rollnick, 2013), which is designed to promote a willingness to make lifestyle changes, has been highlighted as a core competency skill for clinicians and correctional staff (Andrews & Bonta, 2010; Bonta & Andrews, 2017).

Finally, intervention may need to be tailored on the basis of individual characteristics, such as personality characteristics, learning disorders, cognitive ability, mental health issues, culture, and strengths/protective factors (Andrews & Bonta, 2010). For example, individuals with lower cognitive ability would benefit from a greater use
of concrete behavioural strategies as opposed to abstract cognitive ones. Addressing Specific Responsivity factors is designed to optimize effective rehabilitation based on the other core RNR principles. However, given that core principles of the RNR model are generally appropriate across subpopulations of individuals (Andrews, Bonta et al., 1990), individualized modifications to intervention content and methods should be made only when deemed necessary and should be based on a clear and empirically-supported rationale (Guerra et al., 2008). However, how intervention is delivered should be more individualized based on youth characteristics.

There is a paucity of research on the Specific Responsivity principle, particularly in terms of individualizing intervention. Bonta and Andrews (2017) acknowledged that there is little evidence available to speak to the impact of Specific Responsivity factors on creating improved outcomes. Rather, individual practitioners should use clinical judgement and their case conceptualization of the youth to determine the factors that would be relevant for each individual case. Some risk assessment measures (e.g., the Youth Level of Service/Case Management Inventory; Hoge & Andrews, 2002) include a case planning section that guides assessors to consider various Specific Responsivity factors. It has been noted that when intervention follows the rest of the RNR principles, Specific Responsivity is of relatively less importance (Andrews, Bonta et al., 1990). However, it is currently unclear if intervention effectiveness for risk reduction can be increased by appropriately considering Specific Responsivity factors. Promising initial findings suggest that Motivational Interviewing can increase readiness to change and engagement in treatment within adult offender samples (e.g., Anstiss, Polaschek, & Wilson, 2011), but does not decrease recidivism on its own (McMurran, 2009).
Both Responsivity principles have clear links to case planning; General Responsivity guides the types of interventions that should be provided, and Specific Responsivity identifies factors that should be considered in the delivery of the intervention. Only evidence-based programs or strategies for the reduction of criminal behaviour should be utilized, in accordance with General Responsivity. This becomes an important consideration when the youth’s case plan is developed by a different person or organization than will deliver the intervention; referrals should be made to only those services that deliver cognitive behavioural or social learning-based programs. In regards to Specific Responsivity, both factors that act as barriers to engagement and active participation in intervention as well as strengths that can be leveraged and built-upon should be identified and integrated into case planning (Andrews & Bonta, 2010). By incorporating these factors into the delivery of intervention, it is expected that the effects of evidence-based rehabilitation can be enhanced.

1.5.3 **Key clinical issues.** The Key Clinical Issues principles of the RNR framework highlight additional intervention components that can maximize the impact of rehabilitation efforts on criminal behaviour and relate to the premise that even well-designed programs cannot be effective if they are not delivered in a clinically appropriate manner. Specifically, the *professional discretion* principle allows for clinical judgment to be exercised to deviate from intervention plans as specified by the RNR model; however, this should occur very rarely, under extreme circumstances, and the professional must have clear reasons for this deviation (e.g., results of functional analysis; Andrews & Dowden, 2007; Bonta & Andrews, 2017). The *dosage* principle stresses the importance of making efforts to ensure that individuals receive the full dose
of recommended intervention (i.e., minimize drop-out), whereas the *breadth* principle advocates for multimodal programs that target multiple criminogenic needs to maximize effectiveness (Bonta & Andrews, 2017). The principle of *structured assessment* emphasizes that validated assessment instruments must be used to assess Risk/Need areas, strengths, and Specific Responsivity factors, and that these should be integrated into intervention (Bonta & Andrews, 2017). Finally, the *strengths* principle highlights the importance of including strengths in both assessment and intervention (Andrews & Dowden, 2007). When all of these key clinical issue principles are followed, the effects of effective rehabilitation can be enhanced.

### 1.5.4 Organizational principles

The organizational principles of the RNR model relate to setting, staffing, and management considerations to ensure that effective interventions are implemented in a manner that will realize the full rehabilitative effects of these methods. The *community-based* principle recognizes that, when possible, rehabilitation should be delivered in community settings to be most effective (Andrews & Dowden, 2007). When this is not possible, it is important for the organization to maintain linkages to programs and services in the community to facilitate eventual transition and reintegration to the community from custodial contexts (Andrews & Dowden, 2007).

The *core correctional staff practices* principle provides guidance as to skills correctional staff should have and which should be promoted in the selection and training of staff to deliver correctional-based intervention (Bonta & Andrews, 2017). Both relationship and structuring skills are necessary skills of correctional staff for the provision of effective intervention (Bonta & Andrews, 2017). Relationship skills refer to
attributes that promote the development of a therapeutic alliance; specifically, positive expectations for change, understanding, respect, and a caring attitude (Andrews & Dowden, 2007). The emphasis on relationship skills in offender rehabilitation is supported by the fact that, within the psychological treatment literature, the client-therapist relationship is a significant predictor of treatment outcome (e.g., Norcross & Wampold, 2011). When providing rehabilitative intervention to justice-involved populations, these relationship skills are important, but they are not sufficient to enact change; staff must also possess structuring skills (Andrews & Dowden, 2007; Skeem, Eno Louden, Polaschek, & Camp, 2007).

Structuring skills refer to the effective use of reinforcement, advocacy, disapproval, authority, prosocial modeling, and skill building (Andrews & Dowden, 2007). This dual focus on relationship building and structuring is referred to as the “firm but fair” approach (Bonta & Andrews, 2017). Use of effective relationship and structuring skills by correctional staff has been found to further decrease recidivism reduction above and beyond the core principles of the RNR model (Dowden & Andrews, 2004), as well as increase compliance with probation conditions (Skeem et al., 2007). Thus, training provided to staff should focus on enhancing these skills and ongoing clinical supervision should be implemented to ensure appropriate continued use (Andrews & Dowden, 2007). Finally, the management principle specifies how organizations should: a) select, train, and monitor staff delivering programs; b) promote an organizational culture supportive of RNR-based rehabilitation; and c) evaluate all phases of program delivery (Andrews & Dowden, 2007; Bonta & Andrews, 2017).
When organizations follow these principles, it helps to ensure program integrity and adherence to the principles of the RNR model.

1.5.5 Effectiveness of the RNR model. As described in the preceding sections, research evidence has supported each of the core principles of the RNR model. Furthermore, the RNR model as a whole has a substantial body of research support, and effectiveness of RNR-based rehabilitation has been demonstrated across setting (i.e., community vs. custodial), age (i.e., youth vs. adult), and offender subtype (i.e., violent, nonviolent, sexual; Andrews & Bonta, 2010; Bonta & Andrews, 2017). In one of the earliest meta-analyses of RNR effectiveness, appropriate intervention based on the Risk, Need, and Responsivity principles yielded a significant positive effect for reducing recidivism among justice involved youth ($\phi = .29$; Andrews, Zinger, et al., 1990).

Across studies, the mean effect size ($r$) for rehabilitation based on the RNR model is 0.29, which although considered a small effect, is comparable to effect sizes observed for other types of psychological interventions, such as psychotherapy for child trauma or panic attacks, and much larger than effect sizes for specific medical interventions, such as aspirin as prevention for heart attacks and chemotherapy for breast cancer (Andrews & Bonta, 2010). Thus, when the principles of the RNR model are followed, rehabilitation can significantly reduce recidivism in justice-involved populations.

However, intervention integrity is imperative to create these positive outcomes, because effectiveness of RNR-based interventions is directly associated with adherence to the principles of the model (Bonta & Andrews, 2017).

1.5.5.1 Effectiveness and RNR adherence. The biggest challenge for programs in their attempts to reduce recidivism is maintaining fidelity with the principles of the
RNR model. Effective interventions must not only contain the necessary components, but also be implemented with fidelity (Guerra et al., 2008). It has consistently been found that increases in adherence to the core principles of the RNR model (i.e., Risk, Need, and Responsivity) are directly associated with reduced rates of recidivism (e.g., Bonta et al., 2011; Dowden & Andrews, 2000). Across meta-analyses, the mean effect size for interventions focused on reducing youth recidivism have varied widely, depending on whether adherence was high (i.e., adherence to all core principles; \( r = .27 \)), moderate (i.e., adherence to two of three principles; \( r = .19 \)), low (i.e., adherence to only one principle; \( r = .01 \)), or none (i.e., adherence to no principles, no human service; \( r = -.02 \); Bonta & Andrews, 2017). Thus, adherence is critical for achieving positive effects; however, achieving this level of adherence in practice appears to be challenging.

Although many of the RNR principles seem intuitive to those in the offender rehabilitation field, Andrews and Bonta (2010) reported that only 16% of correctional programs surveyed (\( n = 374 \)) adhered to the Risk, Need, and General Responsivity principles. In fact, the majority of these programs (61%) adhered to one or none of the principles (Andrews & Bonta, 2010). This is consistent with low reported adherence rates in the implementation of rehabilitation programs and case management strategies across other studies (e.g., Bonta et al., 2008; Campbell et al., 2014; Dowden & Andrews, 2000, 2004; Vieira et al., 2009; Vincent, Guy, Gershenson, & McCabe, 2012). For instance, a recent evaluation of a case management strategy used in a provincial probation service for both adult and youth offenders in New Brunswick, Canada found relatively low rates of adherence to the Risk and Need principles, and Responsivity adherence could not be evaluated because of lack of recorded information in case files.
Barriers, such as heavy caseloads, high rates of staff and management turnover, insufficient or unstable sources of funding, lack of training in or understanding of the RNR model, or lack of appropriate community resources to address criminogenic needs, may help explain limited adherence in practice (Bonta et al., 2008; Campbell et al., 2014).

1.6 Risk Assessment

The RNR model specifies how to most effectively rehabilitate youth and manage their risk. To implement these principles in practice, as emphasized in the assessment principle, it is necessary to have an accurate and reliable estimate of the individual youth’s risk for recidivism as well as the criminogenic needs contributing to this risk, so that a case plan to target these factors can be designed. It is through the process of risk assessment that intervention targets and level of intervention/supervision needed are identified.

1.6.1 History of youth risk assessment. Whenever youth become involved with the criminal justice system, decisions need to be made about how the youth should be dealt with, and these decisions can occur at multiple points throughout the system (e.g., a police officer’s decision to refer a youth to a diversion program, a judge’s decision to impose a custody sentence). Ideally, any decisions should be informed and made following careful deliberation. Although the criminal justice system is moving towards more informed decisions (e.g., by having diversion committees make decisions about appropriate sanctions outside of the justice system, seeking risk assessments for sentencing decisions), these types of decisions do not always occur in practice (Hoge, 2012). In addition, the way in which decisions are made is important to consider. Early
methods to estimate an individual’s likelihood to engage in further criminal behaviour
typically relied solely on the evaluator’s opinion, typically following a clinical interview or file
review, a process referred to as unstructured clinical judgement. However, limitations of
this approach have been identified, including introduction of evaluator bias, poor
predictive validity, and lack of reliability across time or raters (Hoge, 2002).

Limitations of unstructured clinical judgement are particularly concerning when
considering the potential consequences forensic decisions can have on a youth, such as
determining the setting in which they will reside, length of sentence given, and
restrictions placed on their freedom. In a meta-analysis comparing clinical to mechanical
(i.e., statistical) predictions, statistical methods performed equivalent to or better than
clinical predictions regardless of decision-maker discipline or training (i.e., medical or
psychologist), experience, type of information provided (i.e., interview, medical tests,
psychological questionnaires) and outcome criterion (Grove, Zald, Lebow, Snitz, &
Nelson, 2000). Moreover, the mean difference in effect sizes between clinical and
statistical prediction for forensic outcome criteria (e.g., likelihood of recidivism) was
large (.89) across both medical and psychologist decision-makers, favouring statistical
methods (Grove et al., 2000). Smaller mean differences were observed for clinical or
personality-related (.19) and educational (.09) judgements (Grove et al., 2000).
Therefore, use of statistical methods of prediction appears to be especially important in
forensic decision-making. In fact, it has been suggested that relying on unstructured
clinical judgement when conducting risk assessment represents unethical practice
(Bonta, 2002).
The alternative method of decision-making proposed to address the concerns with unstructured professional judgements was actuarial (i.e., statistical) measures. Bonta (2002) defines an actuarial measure of risk as “structured, quantitative, and empirically linked to a relevant criterion” (p. 356). These measures provide a set of factors to be assessed and rated, and then provide an overall risk rating or likelihood of recidivism based on the score achieved. Hoge (2008) outlined additional advantages of utilizing standardized approaches for youth risk assessment, including that they provide greater decision-making consistency across clinical contexts and evaluators. Moreover, the psychometric properties (i.e., reliability and validity) of these tools can be empirically evaluated. Although these tools have been criticized for limiting professional discretion, and certainly do not provide perfectly accurate predictions, they do achieve the goals of standardizing the risk assessment process across youth, provide greater consistency in decisions, and improve prediction of recidivism (Campbell et al., 2016; Hoge, 2012).

More recently, structured professional judgement (SPJ) methods have been introduced for youth. This type of approach attempts to achieve a balance between unstructured clinical judgement and actuarial prediction, by providing the assessor with a set of factors to evaluate that are empirically related to the outcome in question, but then allowing them to use their clinical judgement to generate the overall risk rating based on consideration of the ratings on these factors. Advocates of the SPJ approach describe its potential benefits as: a) allowing assessors to place differential weight on factors that may be present to a greater degree or viewed to be more directly associated with criminal behaviour; b) allowing assessors to consider context and developmental
changes occurring in adolescence; c) emphasizing that risk is dynamic and can change over time; and d) allowing for consideration of additional factors that may be conceptualized as being criminogenic for particular youth (Borum et al., 2002). Both actuarial and SPJ approaches have appropriate reliability and validity for use with justice-involved youth, and both predict recidivism significantly better than unstructured clinical judgement (Campbell et al., 2016; Hoge, 2012).

1.6.2 Key components of comprehensive youth risk assessment. In order to provide sufficient information to develop an effective case management strategy, risk assessment for youth should be comprehensive and include assessment of multiple areas of functioning/behaviour using multiple assessment methods (Bonta, 2002; Campbell et al., 2016; Hoge, 2008). Utilizing a systemic perspective allows the evaluator to gain an understanding of the context surrounding the youth’s criminal behaviour as well as situational factors (i.e., family, school, peer, and community environments) that may act as risk or protective factors (Campbell et al., 2016). Empirically-supported risk assessment tools should always be utilized to assess for general risk for recidivism and identify criminogenic needs (Bonta, 2002; Hoge 2012).

For some youth, risk for additional outcome criteria may be of interest (i.e., violence, sexual offending), and specialized risk tools should be administered in addition to a general risk/need measure (Hoge, 2008). Other recommended areas of assessment include: personality, behaviour, attitudes/values/beliefs, cognitive and academic aptitude, mental health symptoms, and amenability to treatment (Hoge, 2008, 2012). Although not all of these areas directly relate to the principles of Risk and/or Need, assessment of these other areas aids in identification of Specific Responsivity
factors (Bonta, 2002). A combination of interview, psychological testing, self-report questionnaires, and/or behavioural rating scales can be utilized, collecting information from both the youth and collateral sources (Hoge, 2008). Utilizing more than one of these methods can help offset the inherent limitations of each (Bonta, 2002).

One of the key goals of risk assessment is to provide decision makers with information to assist them in determining the most appropriate sanctions and/or interventions for the youth. Decision-making for justice-involved youth should follow evidence-based practice and be based on available empirical evidence in regard to the most effective methods for reducing criminal behaviour. The utilization of a theoretical model to inform risk assessment and conceptualization is recommended to structure the assessment process and communicate information to decision makers in a meaningful way (Bonta, 2002). Based on the effectiveness of the RNR model for reducing criminal behaviour among justice-involved youth, it is recommended that an RNR-based framework be utilized when conducting a risk assessment with youth (Bonta, 2002; Hoge, 2002; Campbell et al., 2016). Assessing protective factors is directly relevant to Specific Responsivity, but also would be theoretically expected to assist in predicting likelihood of recidivism (Bonta & Andrews, 2017). RNR-based risk assessment is facilitated by use of a risk assessment tool based on the RNR model; for youth, the Youth Level of Service/Case Management Inventory (Hoge & Andrews, 2002) is such a tool, and has sufficient research support to be recommended for assessing general recidivism risk in youth (Campbell et al., 2016; Schmidt et al., 2011).

In order to clearly communicate the information relevant to forensic decisions to decision makers, assessors must integrate information across various sources and
assessment methods to develop a conceptualization of the youth, including his/her risk/need and protective factors. Decisions should never be made solely on the basis of a single measure or tool (Hoge, 2008), but instead on the integration of sources of data to identify criminogenic needs, specific responsivity considerations, protective factors, and ultimately a conceptualization of recidivism risk. Bonta (2002) cautioned against the use of psychological tests (e.g., personality, mental health symptomatology) to make determinations of risk, but accepted their use for identifying and highlighting responsivity factors. These potential mitigating factors (e.g., cognitive and/or emotional limitations) should be highlighted to decision makers, and recommendations should be based on the least restrictive alternative necessary to manage risk (Bonta, 2002).

Based on the implications of risk assessment results for decision-making, it is imperative that assessors always exercise professional responsibility in the administration and interpretation of risk assessment tools (Bonta, 2002). Given that risk assessment results do not always directly answer the question for which the assessment was requested (i.e., whether the youth’s risk can be managed in the community); clinical judgement must be exercised to extrapolate the gathered risk and protective information to answer the specific forensic question (Hoge, 2012). Although risk assessment is often thought of as a means of attempting to predict future behaviour, when utilized in the case planning process to design rehabilitative interventions, it also works to help reduce risk and prevent future offending (Campbell et al., 2016).

A balanced focus on both areas of risk and of strength is advocated (Bonta & Andrews, 2017; Gilligan, 2000; Guerra et al., 2008; Hoge, 2008; Hoge et al., 1996; Rennie & Dolan, 2010). However, the lack of consideration of strength and protective
factors has been an ongoing criticism of risk assessment (e.g., Rogers, 2000). It has been
argued that failure to consider youth strengths limits the predictive ability of risk
assessment, in that youth demonstrating a high number of risk factors with and without
additional protective factors may display different outcomes (Lodewijks, de Ruiter, &
Doreleijers, 2010; O’Dougherty-Wright & Masten, 2006; Rogers, 2000). In addition,
utilizing existing areas of strength and building in these strengths should be part of the
case plan to help reduce recidivism (Efta-Breitbach & Freeman, 2004; Hoge, 2008), and
therefore must be identified through assessment along with criminogenic and non-
criminogenic needs. One of the challenges for integrating protective factors into risk
assessment is that not all of the common risk assessment instruments for youth include
protective factors. Even when they are included, they tend to be limited in scope.
Moreover, guidance about how to integrate risk and protective factors to form evidence-
based judgements of risk remains limited (Hanson, 2009).

### 1.7 Protective Factors

Protective factors have been conceptualized as something that, when present,
*decreases* the likelihood of a negative outcome or promotes positive outcome when the
individual experiences adversity (Naglieri & LeBuffe, 2006). Referring specifically to
the negative outcome of youth offending, Fougere and Daffern (2011) described
protective factors as “aspects of an individual and their situation that contribute to a
decreased likelihood of criminal behaviour by having a direct effect on problem
behaviours or by moderating the relationship between risk factors and criminal
behaviour” (p. 245). This definition emphasizes that, similar to risk factors, both
individual youth characteristics and situational factors can exert a protective effect, as
can the interaction between the youth and his/her environment. Protective factors may also create a moderating effect. Specifically, protective factors can buffer the negative impact of risk factors (Naglieri & LeBuffé, 2006); thus, the presence of protective factors may have relatively greater importance for youth with more risk factors than for a youth with fewer risk factors (Hoge et al., 1996; O’Dougherty Wright & Masten, 2006). In the absence of risk, protective factors would not be expected to significantly impact outcome.

Protective factors across the broader social environment, family, and individual domains often interact and influence each other, so should not be conceptualized as completely distinct (Goldstein & Brooks, 2006). For example, youth with protective individual characteristics may more easily elicit support from others or be more likely to utilize external support systems. It is also important to note that although risk and protective factors often fall on opposite ends of a continuum (e.g., poor quality relationships with parents is a risk factor, whereas close and supportive relationships with parents is a protective factor), the absence of a risk factor does not necessarily imply the presence of a protective factor (Goldstein & Brooks, 2006). For instance, just because a youth is not disengaged from school (a risk factor), this does not mean that they are particularly engaged and interested in school (a protective factor). Rather, they may fall in a more neutral range between the negative and positive poles of the dimension. In addition, protective factors may demonstrate additive effects, in that each additional protective factor further reduces the likelihood of negative outcome (Lodewijks et al., 2010), although it is currently unknown whether there is an upper limit to the number of protective factors that can additively reduce risk.
1.7.1 Protective factors and youth offending. Compared to risk factors, protective factors that reduce offending in youth are less well understood. The literature is also limited by significant inconsistency across studies in which protective factors are examined, and how broadly (e.g., family) or specifically (e.g., good family communication) these factors are defined. Thus, there is no comparable Central Eight of criminal behaviour protective factors. Although it has been highlighted that any criminogenic need domain on the YLS/CMI can also represent an area of strength (e.g., an adolescent has a close peer group composed of prosocial peers, with no association with antisocial youth; Bonta & Andrews, 2017; Hoge & Andrews, 2002), the ability of these strength areas to reduce likelihood of recidivism has not been evaluated. Numerous investigators (e.g., Lodewijks et al., 2010) have called for more research on the factors that predict desistance from criminal behaviour among youth in order to inform evidence-based assessment and intervention utilizing a balanced risk/strength approach. Using the broad categories of social environment, family, and individual youth characteristics, factors that have been found to reduce the likelihood of engaging in criminal behaviour are summarized next.

1.7.1.1 Social environment/family. Several aspects of a youth’s social environment have been highlighted as protective factors. The presence of social support generally is negatively associated with offending in youth (Born, Chevalier, & Humblet, 1997; Borum et al., 2002; Hoge et al., 1996; Lodewijks et al., 2010), although the perceived amount of available social support may be more important than the actual amount available (Prince-Embry, 2007). Support obtained from adults and from prosocial peers both can exert a protective effect, but quality adult support may be
especially important following youth exposure to stressors (Efta-Breitbach & Freeman, 2004). Furthermore, strong attachment and bond to at least one prosocial adult, either within (e.g., parent, grandparent) or outside (e.g., teacher, coach) of the family, is an additional protective factor distinct from social support (Born et al., 1997; Borum et al., 2002; Lodewijks et al., 2010). In addition, appropriate monitoring and supervision by parents reduces the likelihood of criminal activity (Bonta & Andrews, 2017). Within the school setting, both high achievement (Hoge et al., 1996) and strong commitment to, or engagement in, school demonstrate protective effects (Borum et al., 2002; Lodewijks et al., 2010). An additional social protective factor includes spending free time engaged in productive, structured, and prosocial activities (Borum et al., 2002; Cottle et al., 2001; Hoge et al., 1996).

1.7.1.2 Individual characteristics. The importance of the personal characteristics and resources a youth possesses also has been emphasized in regard to reducing the likelihood of criminal behaviour. Individual protective factors related to the cognitive domain include above average overall cognitive ability (Borum et al., 2002; Cottle et al., 2001; Efta-Breitbach & Freeman, 2004; Fougere, Daffern, & Thomas, 2015), strong verbal abilities (Cottle et al., 2001), ability to inhibit behaviour (i.e., executive functioning; Bonta & Andrews, 2017), and prosocial attitudes (i.e., not supportive of crime, positive attitude towards authority and intervention; Borum et al., 2002; Hoge et al., 1996; Lodewijks et al., 2010). Social abilities, such as having the ability to establish positive and meaningful relationships with adults and peers (Born et al., 1997) and to resolve interpersonal conflict (Borum et al., 2002) can also exert a protective influence. Other protective youth characteristics are more of an emotional nature, including
emotional self-regulation (Efta-Breitbach & Freeman, 2004), ability to cope with stressors and demonstrate adaptability (Born et al., 1997; Efta-Breitbach & Freeman, 2004), a positive sense of self-esteem or self-efficacy (Born et al., 1997; Efta-Breitbach & Freeman, 2004), and an internal locus of control (i.e., self-determination; Efta-Breitbach & Freeman, 2004). Another individual characteristic that has been highlighted as a protective factor is a “resilient personality” (e.g., Borum et al., 2002).

1.7.1.2.1 Resiliency. The concept of resilience was originally developed by Werner and Smith (1982) to describe a group of participants in their longitudinal birth-cohort study who, despite exposure to a variety of risk factors in early childhood (e.g., family instability, low socioeconomic status), achieved a positive outcome in regards to functioning in adulthood (i.e., lack of serious learning or behavioural problems, success across work, family, and social domains, possessing realistic goals and expectations). In this conceptualization, resilience refers to a desired outcome that is obtained despite experiencing adversity. Resilient individuals composed only 10% of the Werner and Smith sample, and were hypothesized to possess favourable personal characteristics that better allowed them to elicit positive responses from their environments. Thus, outcome was contingent on a youth by environment interaction.

The “overcoming the odds” conceptualization of resiliency, which focuses on the creation of positive outcomes despite adversity, has been endorsed by other researchers as the most common definition of resiliency used in the literature (Fougere & Daffern, 2011). For example, Efta-Breitbach and Freeman (2004) defined resiliency as “achieving positive outcomes while exposed to significant risk factors expected to result in an adverse outcome” (p. 264). Similarly, Gilligan (2000) referred to a resilient
individual as “one who bounces back having endured adversity, who continues to function reasonably well despite continued exposure to risk” (p. 37). However, a challenge for these definitions is operationalizing what is meant by a “good” or “successful” outcome (Fougere & Daffern, 2011). Some definitions focus on positive functioning whereas others simply require the absence of significant problems in functioning; these are not equivalent outcomes (Goldstein & Brooks, 2006). The outcome-focused conceptualization also provides limited clinical utility for determining which factors to assess or how to provide intervention to increase the likelihood of positive outcome (Fougere & Daffern, 2011).

Resiliency also has been conceptualized from more of a trait perspective, as “qualities of an individual that allow them to succeed despite seemingly insurmountable odds” (Fougere & Daffern, 2011, p. 246). Similarly, Prince-Embury (2007) described resilience as “the degree to which an individual’s personal resources match or exceed their reactivity to internal or external stress” (p. 1). Although there is no agreement in the literature on which specific qualities make someone resilient, various traits have been described that fall into the individual characteristics category of protective factors. These proposed resilient traits include: good social skills and the ability to develop relationships with others; effective communication and problem-solving abilities; positive self-esteem or self-efficacy; above-average intellectual ability and cognitive skills (e.g., planning abilities, delay of gratification); adaptability (i.e., ability to recover quickly from setbacks or changes in environment); and emotional stability and emotion regulation abilities (Borum et al., 2002; Brownlee et al., 2013; Dewhurst & Nielson, 1999; Fougere & Daffern, 2011; Goldstein & Brooks, 2006; Prince-Embury, 2007).
Although a trait conceptualization is useful to (a) guide assessment of resiliency, (b) allow comparisons across youth, and (c) inform the design of resilience-building interventions, a sole focus on presence or absence of various characteristics may oversimplify the construct by ignoring the contribution of the context in which the youth is situated (Fougere, Daffern, & Thomas, 2012; Kaplan, 2006; O’Dougherty Wright & Masten, 2006).

Criticisms against the trait conceptualization have led to an alternative focus on resiliency as a process more so than a dispositional trait, which describes how a combination of internal and external factors (e.g., peers, community) may facilitate the youth’s coping with negative experiences in order to achieve positive outcomes (Brownlee et al., 2013). This conceptualization recognizes the importance of the interaction between the youth and his/her environment in determining outcome; under conditions of adversity, youth with impaired developmental processes may struggle to cope without sufficient external supports (Goldstein & Brooks, 2006). Although the process conceptualization recognizes the complexity inherent in the construct of resiliency, the specifics of how this process works remain poorly understood. Thus, little guidance for assessment and intervention is currently provided by defining resiliency as a developmental process.

Regardless of whether resiliency is defined by the individual traits that promote a positive outcome or as the process by which these factors and environmental factors interact to produce a particular outcome, the focus of assessment and intervention is on the characteristics or traits that serve as treatment targets and/or strengths to be utilized to reduce risk and increase positive outcome. Furthermore, resiliency is best viewed as
falling along a continuum rather than as a dichotomous outcome (O’Dougherty Wright & Masten, 2006). At a minimum, resiliency may best be conceptualized as a set of individual protective factors that interact with environmental protective factors to reduce the likelihood of criminal behaviour and/or buffer the negative effects of risk factors. Within justice-involved youth populations, resiliency is often used to refer to youth who desist from further criminal behaviour (Born et al., 1997; Efta-Breitbach & Freeman, 2004). Notably, there also has been limited research directed to the investigation of resiliency in justice-involved youth populations (Fougere et al., 2012; Mowder, Cummings, & McKinney, 2010).

1.8 Protective Factors and Risk Assessment

1.8.1 Assessment of protective factors. Despite statements in the research literature that protective factors should always be included as a part of assessment (Gilligan, 2000) and should be included on all youth risk assessment instruments (Lodewijks et al., 2010), evidence-based assessment of protective factors within risk assessment processes lags far behind that of risk factor assessment. Two youth risk assessment measures that have been recommended to assess risk for general and violent recidivism and which have demonstrated clinical utility for case planning (Campbell et al., 2016) are the Youth Level of Service/Case Management Inventory (YLS/CMI; Hoge & Andrews, 2002) and the Structured Assessment of Violence Risk in Youth (SAVRY; Borum et al., 2002). Although the YLS/CMI is based directly on the RNR model and assesses the Central Eight risk factors, it does not explicitly assess protective factors. Although each criminogenic need area can be rated as a strength (representing the opposite end of the continuum from risk on that factor), these strengths are not scored or
incorporated into the overall risk rating in any way. Furthermore, the YLS/CMI does not assess any protective factors distinct from the Central Eight, so it has a limited scope.

In contrast to the YLS/CMI, the SAVRY does include a protective factor scale consisting of six items, and assessors are prompted to consider both risk and protective items in developing a summary judgement of risk (Borum et al., 2002). However, these factors are simply rated as present or absent, which is not consistent with the dimensional view of protective factors (Fougere et al., 2012). Such a format may obscure predictive effects. In addition, the SAVRY items do not cover all empirically supported protective factors for youth criminal behaviour, and some of the factor definitions (e.g., resilient personality) are quite broad and vague, which may lead to inconsistency in ratings or heterogeneity in presentation across youth for whom it is rated as present (Fougere et al., 2012). Finally, little guidance is provided to assessors as to how to balance or integrate risk and protective factors when formulating a risk judgment.

Given these limitations with evaluating protective factors within risk assessment instruments, research is needed to comprehensively evaluate the presence and degree of protective factors across multiple domains and determine their relative role to risk factors in risk formulation. Although psychological measures exist that tap into relevant protective factor constructs, it can be challenging to determine how to integrate results into the risk conceptualization for the youth to present a balanced perspective. Furthermore, many of these measures are not validated for use in justice-involved youth populations. Likely as a result of these limitations, less research has focused on
examining the presence of protective factors in justice-involved youth, and the relationship of these factors to recidivism.

### 1.8.2 Protective factors and the prediction of recidivism

Research that has focused on protective factors in justice-involved youth samples has found that only a minority of youth possess a high number of protective factors relative to risk factors (Born et al., 1997; Carr & Vandiver, 2001; Schmidt et al., 2011). This may be particularly true in custodial samples (Rennie & Dolan, 2010). Of the six protective factors assessed, incarcerated male youth in a study by Rennie and Dolan (2010) were rated as having, on average, only 1.5 protective factors present; only three youth (2%) had all six factors present. The most common protective factors endorsed were the presence of an enduring positive attachment with a prosocial adult (64% of youth) and the presence of strong social support (48%). In contrast, only 14% of youth were rated as having a strong commitment to school, and 22% as having significant prosocial involvement. Notably, in this same sample, a significant minority (42%) of the youth were rated as not having any protective factors present.

Similarly, trait resiliency is also relatively uncommon among justice-involved youth (Mowder et al., 2010). Specifically, Mowder et al. (2010) found that 29% of their incarcerated youth sample fell into a cluster that displayed average resiliency traits, and no cluster displayed above average resiliency. Not surprisingly, the presence of protective factors has been found to be inversely associated with risk level, with lower risk youth displaying more protective factors relative to high risk youth (Lodewijks et al., 2010). Furthermore, Rennie and Dolan (2010) found that a greater number of previous offences was significantly related to the presence of fewer protective factors.
Youth demographic characteristics are often associated with the presence of protective factors. Some research has found significant gender differences, with female youth possessing a greater number of protective factors than males (Born et al., 1997). There is also some evidence of age differences in both the presence and the effect of protective factors. Youth with an older age of initial criminal behaviour were found to possess more protective factors than youth with earlier onset of criminal behaviour (Rennie & Dolan, 2010), and protective factors exerted a stronger effect in older justice-involved youth in a study by Hoge et al. (1996). Justice-involved youth with average resiliency traits were also more likely to be older (Mowder et al., 2010). The relationship between resiliency and ethnicity has not been examined in justice-involved youth samples.

Research attempting to identify the factors that distinguish youth who re-offend from those who do not has found that youth who desist from crime possess significantly more protective factors than youth who persist with criminal behaviour (Carr & Vandiver, 2001; Efta-Breitbach & Freeman, 2003, as cited in Efta-Breitbach & Freeman, 2004; Lodewijks et al., 2010). Interestingly, in the Carr and Vandiver (2001) study, the number of risk factors present did not differ between recidivists and non-recidivists. However, that both groups were relatively low in risk and protective factors may have contributed to these disparate outcomes. For high risk youth following institutional placement, it was individual characteristics (i.e., adaptability, social skills, caring, able to conform to institutional norms), rather than family or other social protective factors, that distinguished those who desisted from criminal behaviour and those who committed further offences (Born et al., 1997). However, Carr and Vandiver
(2001) found that protective personal characteristics, positive family conditions, and prosocial peer selection were all significantly more common among youth who did not commit further offences.

The specific type of effect that protective factors may exert on recidivism is currently not well understood. It has been suggested that protective factors may demonstrate a direct effect on outcome, and that they also could interact with risk factors to determine outcome (i.e., a moderating effect). Several studies have found direct associations between protective factors and recidivism. Pearl et al. (2009) found that the total protective score on a scale including individual, family, school, substance use, peer factors, and lack of criminal history was significantly correlated with non-recidivism ($r = .33$). This is consistent with Rennie and Dolan (2010), who found a significant negative correlation ($r = -.28$) between number of protective factors present and recidivism. Furthermore, in examining the predictive validity of protective factors, Rennie and Dolan found that the total number of protective factors rated as present was significantly predictive of desistance from offending, showing a strong effect (AUC = .71). In their sample, having at least one protective factor was enough to reduce the likelihood of recidivism (Rennie & Dolan, 2010), highlighting the importance of assessing and enhancing protective factors to buffer the effects of risk.

Hoge et al. (1996) examined both direct and moderating effects of protective factors and found support for a direct relationship between presence of protective factors and non-recidivism, but not for a moderating relationship (i.e., did not differ in their effect on the basis of risk level). Using the SAVRY, Lodewijks and colleagues (2010) found that the protective factor scale not only significantly predicted desistance from
violent offending over a 3-year follow-up period, but contributed incremental variance to the prediction model over and above the effects of dynamic risk factors. However, using a 10-year follow-up period, Schmidt et al. (2011) found that although the SAVRY protective factor scale significantly predicted recidivism, it did not add incremental predictive validity above and beyond the effects of the numerical SAVRY risk total score. In the only published study examining the ability of a resiliency measure to predict recidivism, Fougere et al. (2015) found that their resiliency score did not significantly predict young adult offending. In summary, research examining the predictive validity of protective factors in regard to youth recidivism is very limited and inconsistent. This is particularly true when examining specific protective factors, but even so when using a range of protective factors. In addition, although it has been suggested that protective factors may demonstrate a moderating effect on the relationship between risk factors and recidivism, most researchers have only examined a direct or incremental effect. Therefore, further clarification of the type of effect that protective factors exert is needed.

1.8.3 Protective factors and case planning. As described in the Risk Assessment section of this introduction, risk assessment should be used to directly inform case planning for justice-involved youth, both in regard to risk management and rehabilitation. There are two means that can be used to increase the likelihood of a positive outcome (i.e., desistance from criminal behaviour) for justice-involved youth; either reduce youth vulnerability by decreasing the presence or impact of risk factors or by increasing the presence or effect of protective factors (Goldstein & Brooks, 2006). A dual focus for case planning that blends methods aimed at reducing risk factors while
also increasing strength and protective resources may be particularly impactful (Gilligan, 2000). It has been suggested that fostering even one protective factor can have a positive impact on reducing youth criminal behaviour (Rennie & Dolan, 2010). Thus, protective factors should always be incorporated into case planning, which requires adequate assessment of these factors. Unfortunately, little guidance is provided to professionals regarding how to best integrate risk and protective factors when developing evidence-based risk management and intervention plans.

1.9 The Current Study

There is a clear theoretical rationale for assessing protective factors as part of a comprehensive risk assessment with justice-involved youth. Inclusion of a greater balance between risk and protective factors also has been advocated for in the risk assessment field (e.g., Lodewijks et al., 2010). Assessing strengths and incorporating them into case planning is also a principle of the RNR model (Bonta & Andrews, 2017), which should guide the youth risk assessment and rehabilitation process. However, in practice, assessing protective factors is limited by: a) the unavailability of empirically-supported, comprehensive measures of protective factors; b) a lack of guidance in regard to integrating risk and protective factors into an overall risk conceptualization, and c) low volume and inconsistency of research on how protective factors are associated with recidivism. Thus, further clarification of the role of protective factors, especially individual youth characteristics, in predicting youth recidivism is needed. Furthermore, a paradigm shift is needed in how youth risk assessment is conceptualized, researched, and practiced if this balanced focus is to be realized.
The current dissertation sought to address gaps in the youth risk assessment literature by further investigating the role of individual protective factors in predicting recidivism among justice-involved youth. Specifically, personal (i.e., optimism, self-efficacy, adaptability), social (i.e., sense of trust, perceived access to support, comfort with others, tolerance of differences), emotional (i.e., sensitivity, recovery, impairment), and cognitive (i.e., cognitive and academic abilities) protective factor domains were of interest. The overall purpose of the current dissertation was to gain a greater understanding of the relationship between these specified protective factor domains and recidivism among justice-involved youth. Utilizing comprehensive psychological and risk assessments conducted as part of standard practice by the Youth Forensic Services (YFS) program of the IWK Health Centre in Halifax, Nova Scotia, psychological questionnaires and clinician-rated risk assessment tools in addition to socio-demographic variables coded from case files were used to investigate the primary research objectives of this dissertation. Specific research objectives and associated hypotheses are presented below.

1.10 Research Questions and Hypotheses

**Research Question 1:** What are the demographic and descriptive characteristics of youth who recidivate?

**Hypothesis 1:** Consistent with previous research, youth who recidivate were expected to be predominantly male, high risk, and to commit new non-violent offences of low to moderate offence severity. No specific hypotheses were made for age or number of new offences.
**Research Question 2:** Do youth who recidivate differ from those who do not on demographic and descriptive characteristics?

**Hypothesis 2:** Recidivists were expected to be of higher risk, have a higher number of index offences, and be more likely to be male and non-Caucasian than youth who did not recidivate. No specific hypotheses were made for age, index offence type, or index offence severity.

**Research Question 3:** Do protective factors predict recidivism among justice involved youth?

**Hypothesis 3a:** Based on previous research, it was hypothesized that all four protective factor domains (i.e., personal, social, emotional, cognitive) would be significantly associated with general recidivism. It was expected that the personal, social, and cognitive domains would be negatively associated with recidivism, whereas the emotional domain would be positively associated.

**Hypothesis 3b:** It was also expected that all four protective factor domains would be significantly related to the time elapsed before the first recidivism event. Specifically, that higher scores on the personal, social, and cognitive domains would be associated with a longer time elapsed before first re-offence and higher scores on the emotional domain related to a shorter time before the first recidivism event.

**Research Question 4:** Which protective factors are the strongest predictors of recidivism?
Due to the exploratory nature of this analysis, no hypotheses were specified regarding which protective factor domains would be more strongly related to general recidivism and time to recidivism.

**Research Question 5:** Does the relationship between protective factors and recidivism vary as a result of youth gender, age, ethnicity, index offence type (i.e., violent, non-violent, technical), or index offence severity?

*Hypothesis 5:* Based on existing research, it was expected that gender and age would be significant moderators. Specifically, it was predicted that the relationship between each protective factor domain and recidivism would be stronger for females than for males. For age, it was expected that the effect of each protective factor domain would be stronger for older youth (i.e., age 15 to 17) than for younger youth. No hypotheses were made regarding the potential moderating role of ethnicity, index offence type, or index offence severity.

**Research Question 6:** Do protective factors account for incremental variance in predicting recidivism, above and beyond the effects of demographic variables and established risk factors?

*Hypothesis 6a:* It was predicted that all of the protective factor domains would account for incremental variance in predicting recidivism.

*Hypothesis 6b:* It was also expected that each protective factor domain would account for incremental variance in predicting time to recidivism. Specifically, it was hypothesized that higher scores on the personal, social, and cognitive domains would be associated with a significantly longer time to first recidivism.
event, whereas higher scores on the emotional domain would be related to a shorter time to recidivism.

**Research Question 7:** Do protective factors moderate the relationship between risk factors and recidivism?

*Hypothesis 7a:* It was hypothesized that each protective factor domain would have a moderating effect on the relationship between risk score and recidivism, such that higher scores on the personal, social, and cognitive protective factor domains and lower scores on the emotional domain would mitigate the effect of risk factors. Furthermore, it was expected that when the significant interaction was followed up, the mitigating effect of protective factors would be larger for high risk youth, compared to those lower in risk.

*Hypothesis 7b:* It was also predicted that each protective factor domain would have a moderating effect on the relationship between risk score and time to recidivism. This interaction was expected to be due to protective factors having a larger mitigating effect for high risk youth, compared to youth lower in risk.
CHAPTER TWO: METHODOLOGY

2.1 Participants

Participants in the current study were 173 youth who received comprehensive psychological and risk assessments conducted by psychologists at the IWK Health Centre’s Youth Forensic Services (YFS). The population served by the Youth Court Team at YFS consists of Nova Scotian youth between the ages of 12 and 18 years who have been referred by a Youth Court Judge for a psychological assessment to aid in the court’s decision-making process. Based on a power analysis conducted using G*Power software (Faul, Erdfelder, Buchner, & Lang, 2009), 78 participants were deemed to be sufficient to detect a medium effect size based on the number of predictors and type of analyses conducted. This dissertation made use of information in the youth’s YFS case files, as described in more detail in the Procedure section below. Therefore, participants were not recruited directly for the current study.

As shown in Table 2, participants in the current dissertation were predominantly Caucasian (64.2%) and male (64.7%), with a mean age of 15.56 years ($SD = 1.48$) and mean education level of Grade 8.42 ($SD = 1.19$). The vast majority of youth were assessed post-conviction (93.6%) to determine general sentencing recommendations (90.2%). Index offence type, categorized based on the most serious index offence, was predominantly violent (61.3%), followed by non-violent (27.7%) and technical (9.8%) offences. Just over half of participants (50.9%) had previous convictions prior to the index offence for which they were being assessed.
2.2 Procedure

As described in the Participants section, the current dissertation utilized data collected as part of comprehensive psychological and risk assessments conducted between 2004 and 2016 at IWK Youth Forensic Services (YFS) in Halifax, Nova Scotia. All assessment cases utilized for the current study were referred by a Youth Court judge for assistance in legal decision-making. As part of these assessments, psychologists conducted clinical interviews with the youth and his/her parents, collected collateral information (e.g., school records, previous assessments), and administered psychological measures and risk assessment tools. This information was used to compose a psychological assessment report that was provided to the court, a copy of which was kept in the youth’s YFS file. All psychological test data for each individual was kept in a separate file and stored separately from case files. Case files selected for inclusion in the current study began in 2004, which were the earliest cases retained on site at YFS. As part of a larger project to create an assessment database, case files were coded in chronological order by trained research assistants and graduate students. The exception was that specific effort was made to code sufficient female cases to complete gender comparisons. This resulted in more recent female cases being coded, due to the gender disparity in referrals to YFS.

Coding training consisted of completing specified training cases, which were reviewed with a member of the research team, followed by coding of additional specified cases to establish inter-rater reliability with previous coders. Additional inter-rater reliability cases were coded at regular intervals over the coding period to control for coder drift. A total of five coders, including the author of this dissertation, were
involved in coding cases. The coding guide was completed utilizing all file information, including the psychological assessment report. All psychological test data and risk assessment tools were also entered into an electronic, de-identified database with the file coded data. Ethics support for creation of the database from secondary use data was received from the IWK Heath Centre Research Ethics Board in 2010 following a privacy impact assessment, which concluded that the information contained in this database and data security procedures presented a minimal risk for identification of participants. Youth Court orders granted annually since 2012 have allowed the research team to access Youth Court assessment data for the purposes of the larger database project, as required under the YCJA. All files coded were assigned a participant identification number to identify them in the de-identified database. A master list is kept in hard copy on site at YFS, which contains youth name, YFS file number, and the participant identification number they were assigned. The master list is stored separately from both the de-identified database and youth case files.

In order to access the de-identified database for the current study, ethics approval was obtained from the research ethics boards of both the IWK Health Centre and the University of New Brunswick Saint John. Given that the current dissertation made secondary use of data, it was demonstrated that the research follows the Tri-Council Policy on secondary use of data when participant consent is not being sought. Article 5.5A in the Tri-Council Policy states:

Researchers who have not obtained consent from participants for secondary use of identifiable information shall only use such information for [research purposes] if they have satisfied the Research Ethics Board that (a) identifiable
information is essential to the research; (b) the use of identifiable information without the participants’ consent is unlikely to adversely affect the welfare of individuals to whom the information relates; (c) the researchers will take appropriate measures to protect the privacy of individuals, and to safeguard the identifiable information; (d) the researchers will comply with any known preferences previously expressed by individuals about any use of their information; (e) it is impossible or impractical to seek consent from individuals to whom the information relates; and (f) the researchers have obtained any other necessary permission for secondary use of information for research purposes (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, & Social Sciences and Humanities Research Council of Canada, 2014, p. 64).

As part of the ethics approval process with the IWK Health Centre, a request for a waiver of consent was made that outlined how these Tri-Council requirements were satisfied. Specifically, in order to collect data from a sufficient number of participants to answer the research questions of the study within a realistic time frame, it was necessary to access assessment data that had been previously collected. No policy exists at YFS to maintain up-to-date contact information for youth, who typically only have future involvement with the service if they are referred for an additional assessment at a later date. Therefore, it was not expected that a sufficient number of participants in the de-identified database could have been contacted for consent to conduct the study, due both to the passage of time since the youth’s assessment was conducted and the often transient nature of this population. Furthermore, youth who would have been able to be
contacted for consent purposes due to continued involvement with YFS would be more persistent offenders, and therefore not necessarily representative of most youth who received assessments through YFS. These factors satisfied the impracticability criterion of the Tri-Council policy, and case file information was required to investigate the current research questions, demonstrating the need for this information. Due to the de-identified nature of the database, there was minimal risk to participants of identification.

Following ethical approval, recidivism information was requested from the Nova Scotia Department of Justice. To do so, a list of participant names and dates of birth was provided to the Department of Justice through an encrypted file transfer on a secure network. A staff member collected the requested information and securely transferred it back to the researchers. The primary researcher removed identifying information and added the recidivism information to the de-identified database. Thus, the final database used in the current dissertation remained de-identified. A currently active Youth Court order, extended to June 2018 (see Appendix A) was already obtained to access youth recidivism records for the larger database project, which allowed the research team to be provided with this information under the YCJA. The database is kept on two encrypted and password-protected memory sticks, stored separately within locked filing cabinets at the IWK YFS and in the Centre for Criminal Justice Studies at the University of New Brunswick. Only members of the research team have access to the database. Case files were not accessed as part of the current study.

2.3 Measures

2.3.1 Demographic factors and index offence. Demographic factors were coded from each youth’s YFS case files, using the IWK Forensic Database Coding
Guide (Appendix B). This coding guide was developed by members of the IWK Forensic Research Group, which is composed of clinicians working for YFS, academic researchers, and graduate students interested in conducting forensic research through YFS. Only variables that were utilized in the current dissertation are described and included in Appendix B. Demographic variables of interest included: age at time of assessment (in years); gender; ethnicity; and highest grade completed at the time of assessment. Date of assessment was coded in order to calculate time to recidivism post-assessment.

Information related to the index offence(s) (i.e., the offence(s) for which the youth was referred for assessment) also was included. Specifically, all index charges, based on the *Criminal Code of Canada* or the *Youth Criminal Justice Act* were coded, as well as the number of index offences falling into each offence type (e.g., assault, mischief) and offence category (i.e., violent, non-violent, sexual, drug, technical). The index offence type was categorized into three categories based on the most severe index offence: violent, non-violent, and technical. Severity of the index offence also was coded, using the modified Ontario Ministry of the Solicitor General and Correctional Services Most Serious Offence system (see Appendix C; Ministry of the Solicitor General and Correctional Services, 1995)\(^1\). This system assigns a rating from 0 (*least serious*; municipal bylaw violations) to 25 (*most serious*; murder/attempted murder) to each offence. When there were multiple index offences, the most serious one was coded.

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\(^1\) The Ministry uses a scale of 1 (*most serious*) to 25 (*least serious*). For interpretative purposes, this scale was reversed for the current research so that the more serious offences were rated with a higher score than less serious offences.
2.3.2 Risk factors and risk level. Youth risk factors and risk level classification were measured using the Youth Level of Service/Case Management Inventory (Appendix D; YLS/CMI; Hoge & Andrews, 2002). The YLS/CMI is an actuarial risk assessment tool and case planning guide for use with justice-involved male and female youth 12 to 18 years of age. It was adapted from an adult risk assessment tool, the Level of Service/Case Management Inventory (Andrews, Bonta, & Wormith, 2004), which was designed based on the RNR model. The YLS/CMI assesses risk of general recidivism, and provides an overall risk level (i.e., Risk principle), assesses dynamic criminogenic needs to be targeted in case planning (i.e., Need principle), and allows raters to identify Specific Responsivity factors (i.e., non-criminogenic needs, intervention-relevant characteristics) relevant for the individual. The case management portion can be used to design an individualized case management strategy. Eight criminogenic need areas are assessed, which correspond to the Central Eight factors specified in the RNR model (Bonta & Andrews, 2017): prior and current offences (i.e., criminal history); family; education; peers; substance abuse; leisure and recreation; personality and behaviour (i.e., antisocial personality traits); and attitudes and orientation (i.e., antisocial attitudes).

The risk/need portion of the YLS/CMI consists of 42 items that are rated as either present (score of 1) or absent (score of 0) currently or over the past year. Each need area is totalled, providing eight criminogenic need subscale scores, which can each be categorized into three levels (i.e., low, moderate, high), corresponding to the degree of need in that area. A strength also can be indicated for each need area, except for prior and current offences; a strength represents a particularly strong protective factor in that
specific area and not merely an absence of the risk factor (Hoge & Andrews, 2002). A total risk/need score is also generated based on the criminogenic need scores, ranging from 0 to 42. The total score is classified into four recidivism risk levels: Low (0 to 8), Moderate (9 to 22), High (23 to 34), and Very High (35 to 42). This score is based solely on risk factors; any endorsed strengths or non-criminogenic needs do not factor into the total but should be qualitatively incorporated into the case planning portion. A professional override option is provided to allow for modification of the overall risk classification on the basis of clinical judgment if there is a clear rationale to do so in a particular case. However, recent research has indicated that use of the professional override has a detrimental effect on the predictive ability of the YLS/CMI (Schmidt et al., 2016).

Normative data for the latest version of the YLS/CMI 2.0, based on a sample of over 12,000 justice-involved youth who are geographically representative of the United States, are available in regard to gender and setting (i.e., community vs. custody; Hoge & Andrews, 2002). However, the original YLS/CMI had Canadian norms and used identical items to the new version. The YLS/CMI is designed to be rated by the assessor following an interview with the client and review of available collateral information and can be used by a variety of professionals (e.g., probation officers, social workers, psychologists). It also can be re-administered to assess for changes on the dynamic criminogenic factors as a result of intervention, which is relevant for all need areas except for prior and current offences, as this domain can only increase over time. For the current study, the aspects of the YLS/CMI that were utilized included the total risk/need
score and risk level category as well as the score and categorization of each individual criminogenic need scale.

Overall, the YLS/CMI has demonstrated good reliability across a variety of samples. Internal consistency was high for the total risk/need score ($\alpha = .88$ to $ .90$), although there was greater variability among the individual criminogenic needs subscales ($\alpha = .56$ to $.80$; Hoge & Andrews, 2002; Schmidt, Hoge, & Gomes, 2005). Most subscales had at least adequate internal consistency, with the lowest internal consistency observed for attitudes/orientation in the community female sample and the highest internal consistency observed for substance abuse among custodial males (Hoge & Andrews, 2002). In the current study, the YLS/CMI total score had high internal consistency ($\alpha = .87$), but there was greater variability across the individual criminogenic need areas ($\alpha = .53$ to $ .79$). Inter-rater reliability is also sound for the total score (ICC = $ .80$; Catchpole & Gretton, 2003) and acceptable for the majority of the criminogenic need subscales (ICCs from $.71$ to $.85$), although an ICC of $ .61$ was obtained for the peer relations need (Schmidt et al., 2005).

The validity of the YLS/CMI has been supported across numerous research studies. In the normative samples, significant differences in total scores were found between custodial and community youth in both males ($d = 1.03$) and females ($d = 1.32$), which is consistent with the expectation that youth in custody should be higher risk than those in the community (Hoge & Andrews, 2002). In addition, convergent validity is supported by numerous studies that have found YLS/CMI scores to be correlated with related measures of antisociality and behaviour problems (Hoge & Andrews, 2002; Schmidt et al., 2005).
The predictive validity of the YLS/CMI has received significant attention. YLS/CMI total scores significantly correlate with general recidivism ($r = .30$, based on official records) and compliance with probation conditions ($r = -.42$; Hoge & Andrews, 2002). In addition, the YLS/CMI total risk/need score is significantly related to the number of new offences committed ($r = .30$) as well as to time to new offence ($r = -.42$), with higher scores related to a shorter time until commission of a new offence (Schmidt et al., 2005). Results of a meta-analysis indicated that the YLS/CMI total score was significantly associated with both general ($r = .32$) and non-violent ($r = .29$) recidivism (Olver, Stockdale, & Wormith, 2009). There is also evidence that youth falling into different risk categories vary in their rates of recidivism, with youth scoring in the high/very high range on the YLS/CMI having significantly higher rates of recidivism than those scoring in the low/moderate range (Catchpole & Gretton, 2003).

Receiver operation characteristic curve (ROC) analyses also have been used to assess the predictive validity of the YLS/CMI. Although the effect size obtained varied across studies due to differences in sample characteristics and length of follow-up period, the YLS/CMI total risk/need score has been found to be moderately to strongly predictive of general recidivism (Catchpole & Gretton, 2003; Schmidt et al., 2011; Welsh, Schmidt, McKinnon, Chattha, & Meyers, 2008; Wershler et al., 2018). The individual criminogenic needs subscales have also been found to be predictive of recidivism, varying from a small effect (AUC = .57, prior and current offences) to a large effect (AUC = .76, education; Wershler et al., 2018). In the Wershler et al. (2018) study, the YLS/CMI was coded by probation officers as part of their typical case management duties, demonstrating the field validity of the measure.
The predictive validity of the YLS/CMI also has been supported in a sample of male youth across non-violent (AUC for males = .73), violent (AUC for males = .65), and technical (AUC for males = .73) recidivism, although smaller effect sizes and larger confidence intervals (i.e., less precise prediction) were observed for female youth (Schmidt et al., 2011). Olver and colleagues (2009) suggested in their meta-analysis that the YLS/CMI is appropriate for assessing risk for general recidivism in male ($r = .33$), female ($r = .36$), Aboriginal ($r = .35$), and non-Aboriginal ($r = .32$) youth. Although Canadian-specific norms are not available for the 2.0 version of the YLS/CMI, several of the reported studies on the psychometric properties of the YLS/CMI were conducted with Canadian samples (e.g., Catchpole & Gretton, 2003; Schmidt et al., 2011), supporting the use of the measure for Canadian youth. Furthermore, the YLS/CMI was developed primarily using Canadian youth in Ontario. In the current study, the YLS/CMI demonstrated strong predictive ability for general (AUC = .78) and violent (AUC = .71) recidivism.

2.3.3 Protective factor domains. Four protective factor domains were assessed as part of the current dissertation: personal, social, emotional, and cognitive.

2.3.3.1 Personal protective factor domain. Personal protective factors refer to beliefs and perceptions held by the youth that promote positive outcome. This protective factor domain was assessed using the Sense of Mastery scale from the Resiliency Scales for Children and Adolescents (Appendix E; RSCA; Prince-Embury, 2007). The RSCA is a self-report measure consisting of three scales: Sense of Mastery, Sense of Relatedness, and Emotional Reactivity. It is written at a third-grade reading level, and all items are rated by the client on a five-point Likert scale, ranging from zero
(never) to four (almost always). Subscale totals are calculated and converted into scaled scores based on gender and age, representing the youth’s degree of resiliency. Total scores for each of the three scales are converted into $T$ scores by youth gender and age. For the sense of mastery and sense of relatedness scales, higher scores indicate higher levels of resiliency, whereas for the emotional reactivity scale, higher scores indicate greater vulnerability. The RSCA was developed to assess multiple domains of individual resiliency characteristics in children and adolescents ages 9 to 18 years. It is based on theory and literature describing factors related to positive outcomes in youth. It conceptualizes resiliency as “having personal resources which match one’s emotional reactivity” (Prince-Embury, 2007, p. 16). The RSCA can be used for a variety of purposes, including screening for vulnerability, case planning, or assessing change (Prince-Embury, 2007).

All RSCA scales have high internal consistency in both the normative samples of 12 to 14-year-olds ($\alpha = .89$ to .91) and 15 to 18-year-olds ($\alpha = .94$ to .95; Prince-Embury, 2007). These results have been confirmed by independent research ($\alpha = .91$ to .94; Kumar, Steer, & Gulab, 2010; Mowder et al., 2010). At the subscale level, internal consistencies are adequate to excellent ($\alpha = .73$ to .92; Prince-Embury, 2007). Test-retest reliability is also good over short periods ($M = 12$ days) in adolescents ($r_s = .86$ to .88; Prince-Embury, 2007). In the current study, internal consistency was high for all three scales ($\alpha = .90$ to .93) and all subscales were also internally consistent ($\alpha = .76$ to .89).

In regard to the validity of the RSCA, confirmatory factor analysis has supported the three-factor structure of the scales (Gibson & Clarbour, 2017; Prince-Embury &
Convergent validity was investigated by examining relationships between the RSCA scales and theoretically-related measures. Both the sense of mastery and sense of relatedness scales were negatively correlated with depression, anger, and disruptive behaviour symptoms, but positively correlated with self-concept (Prince-Embry, 2007). In an adolescent inpatient psychiatric sample, higher vulnerability was associated with higher levels of depression, anxiety, anger, and disruptive behaviour symptoms (Kumar et al., 2010). Youth with higher scores on the RSCA also less frequently engage in risk behaviours (i.e., self-harm, substance use, sexual behaviour, sensation-seeking; Prince-Embry, 2015).

Significant differences in RSCA scale scores have been observed between children and adolescents with clinical disorders, including depression, anxiety, conduct disorder, and attention-deficit hyperactivity disorder, and normative samples, suggesting that resiliency is higher among youth who do not develop psychological disorders (Prince-Embry, 2007). Comparison of clusters between community and outpatient clinical samples also found that youth without mental health diagnoses were more likely to fall in average or high resiliency groups, whereas the clinical youth were more likely to demonstrate greater vulnerability (Prince-Embry & Steer, 2010). Furthermore, RSCA scores were able to correctly classify 77% of youth in regard to presence or absence of mental health diagnosis (Prince-Embry, 2008). The RSCA is deemed appropriate for use in community, outpatient mental health, inpatient psychiatric, and justice-involved adolescent samples (Gibson & Clarbour, 2017; Kumar et al., 2010; Mowder et al., 2010; Prince-Embry & Steer, 2010). Overall, psychometric properties
are promising for the RSCA, but independent research on the reliability and validity of
the scales is currently limited.

The Sense of Mastery scale consists of three subscales that measure youth’s
sense of optimism towards the world generally and their own life specifically, youth’s
perception that they have the ability to be successful (i.e., self-efficacy), and youth’s
perception of their ability to adapt to their environment based on learning from feedback
and asking for assistance when needed (Prince-Embry, 2007). The sense of mastery
scale consists of 20 items, which form the three subscales of optimism, self-efficacy,
and adaptability. The total sense of mastery \( T \) score represented each youth’s score on
the personal protective factor domain in the current dissertation.

2.3.3.2 Social protective factor domain. The social protective factor domain
refers to individual youth characteristics that enable him/her to develop positive social
relationships and elicit support from others. The social protective factor domain was
assessed using the Sense of Relatedness scale of the RSCA. Sense of relatedness is
described as “comfort with others, sense of trust, perceived access to support by others,
and the capacity to have differences with and still be in relationships with others”
(Prince-Embry, 2007, p. 12). The sense of relatedness scale is composed of the four
subscales of sense of trust (i.e., perception that others can be trusted), perceived access
to support, comfort with others, and tolerance of differences (i.e., comfort expressing
differences within a relationship), for a total of 24 items. The total sense of relatedness \( T \)
score was used as the youth’s score on the social protective factor domain.

2.3.3.3 Emotional protective factor domain. The emotional protective factor
domain refers to a youth’s ability to effectively regulate his/her emotions and cope
effectively with negative emotional experiences. The emotional protective factor domain was assessed with the Emotional Reactivity scale of the RSCA. Emotional reactivity represents the youth’s vulnerability to experiencing and being negatively impacted by emotional experiences (Prince-Embry, 2007). The emotional reactivity scale, consisting of 20 items, includes the three subscales of sensitivity (i.e., threshold for emotional reaction), recovery (i.e., length of time required to return to a baseline emotional state), and impairment (i.e., how much emotional reactions impair ability to regulate emotions). The total emotional reactivity $T$ score was used as the youth’s score on the emotional protective factor domain. This scale is reversed, such that lower scores indicate a greater degree of resiliency.

2.3.3.4 Cognitive protective factor domain. The cognitive protective factor domain refers to a youth’s general cognitive ability (i.e., intelligence quotient; IQ). Level of general cognitive ability was based on the youth’s score on one of the following measures: Kaufman Brief Intelligence Test, Second Edition (K-BIT-2; Kaufman & Kaufman, 2004); Wechsler Intelligence Scale for Children – Fourth Edition (WISC-IV; Wechsler, 2003); or Wechsler Adult Intelligence Scale – Fourth Edition (WAIS-IV; Wechsler, 2008). The particular cognitive test administered to the youth depended on the youth’s age as well as whether a full or screening cognitive assessment was conducted. The K-BIT is a cognitive screening measure for youth and adults, whereas the WISC-IV and WAIS-IV are more comprehensive measures of cognitive ability, for children and adolescents up to age 16 years and individuals 16 years of age and older, respectively. All of these tools have consistent standardized scores that are associated with common descriptors of ability (i.e., low, borderline, low average,
average, high average, superior, very superior) based on comparing the youth’s standardized scores to a normative sample. The cognitive domain score for each individual was their total IQ standardized score on whichever measure they were administered.

2.3.4 Recidivism. New offences committed by participants, in the form of any new charges following the date of assessment, were used to measure general recidivism over the follow-up period. Two indicators of recidivism were of interest in the current dissertation: whether the youth received any new charges (yes/no), and the length of time before first recidivism event. Charges, sentence type, and sentence length were requested for all study participants from the Nova Scotia Department of Justice. The follow-up period varied across participants based on when their initial assessment was conducted, spanning from the date of assessment to an end date of December 31, 2016 (maximum follow-up period of 12 years). Recidivism data was coded in a manner consistent with index offences on the file coding guide. Specifically, the number of new offences of each offence type and category, the severity of each new offence, the time to first new offence, and the category of the first re-offence were coded (see Appendix B).

Time spent in custody over the follow-up period was estimated from records provided by the Nova Scotia Department of Justice. Specifically, data were provided on custodial sentences received by youth and time spent in remand (i.e., awaiting court date) during the follow-up period (including related to the index offences). Exact release dates were not available for all custodial sentences. In these cases, in the absence of other available information, time spent in custody was estimated as two-thirds of the total sentence length. This represents the statutory release date for the sentence, at which
point most individuals are released in the community. It was expected that although some individuals would have been released prior to this date, others would have served the full sentence. This method of estimating custody time is consistent with what has been used in other studies (e.g., Schmidt et al., 2016). To calculate the time to recidivism, any time incarcerated between the data of assessment and date of new offence was subtracted from the total number of days elapsed, to represent time free to commit new crimes in the community during the follow-up period.
CHAPTER THREE: RESULTS

3.1 Data Screening and Conditioning

Prior to conducting data analysis, data were screened for completeness, outliers, and violations of statistical assumptions. Data were first screened to ensure that all cases contained the required information to proceed with analyses (i.e., recidivism data, completed YLS/CMI and RSCA scales). Several cases were eliminated at this stage. Specifically, the psychological report was not completed in five cases and recidivism data could not be obtained for another six youth who resided out of province at the time of assessment and did not have an identification number within the Nova Scotia Department of Justice (NS DoJ). Additionally, neither a YLS/CMI or RSCA had been administered for 21 cases, 11 youth had no YLS/CMI, and 44 cases had no RSCA completed. Following deletion of these cases, the final sample size was 173 participants. Data were also screened for data entry errors by examining descriptive statistics and frequency distributions. Data entry errors were minimal, and all were corrected prior to further data screening.

3.1.1 Missing data analysis. Aside from the deleted cases previously mentioned, no participants were missing greater than 10% of data across the demographic, index offence, YLS/CMI, RSCA, and recidivism variables. Therefore, all 173 remaining participants were retained. The quantity and pattern of missing data across demographic, index offence, recidivism, and questionnaire variables were examined using SPSS Missing Value Analysis (MVA). Individual variables with the highest proportion of missing data included ethnicity (9.8% missing; \( N = 156 \)) and education level (8.7% missing; \( N = 158 \)). All other variables had less than 2% of data
missing. Missing data on the cognitive protective factor domain was not considered in calculating the percentage of missing data because not all youth were given cognitive or academic ability measures as part of their assessment; thus, it was anticipated that a significant proportion of participants would be missing this variable. Cognitive screening tools were administered to 83 participants and 64 participants received academic screening. Little’s Missing Completely at Random (MCAR) test was not significant, $\chi^2 (576) = 597.13, p = .26$, indicating that the data were missing completely at random. Thus, missing data did not follow a specific pattern (i.e., was not associated with one of the independent or dependent variables; Tabachnick & Fidell, 2013).

Due to the fact that missing data was primarily on categorical demographic and index offence variables, it was deemed to be inappropriate to estimate or input missing values. Missing data on these variables indicates that the coder could not find information in the youth’s chart to rate these variables (e.g., ethnicity was never mentioned); thus, there would be no way to accurately estimate what the value should be based on available data. There was also one case in which one of the subscales of the YLS/CMI (i.e., education) was missing in its entirety. Although all other YLS/CMI items were rated and a total score and risk rating were reported, it would not be appropriate to estimate scores on an entire subscale based on items assessing other risk/need areas. Thus, these participants were retained with some missing data and pairwise deletion was used to exclude these cases from analyses that required the missing variables. Although this strategy may have resulted reduced power for statistical analyses, it was the most accurate and appropriate method to reflect the true nature of the data.
3.1.2 Univariate outliers. Univariate outliers were then examined by calculating standardized scores (i.e., z-scores) for each variable. Based on criteria described by Tabachnick and Fidell (2013), standardized scores greater than +/- 3.29 were considered outliers. Univariate outliers were not identified on any independent variables. However, the Time to Recidivism (Controlled for Time in Custody) variable had five outliers at the high end of the distribution. The z-scores for these outliers ranged from (+3.35 to +3.68). Upon examination of the histogram for this variable, it appeared that these cases were not discontinuous (i.e., were not visually separated) from the rest of the distribution. All of the outlying cases were non-recidivists; thus, it makes sense conceptually that their time to recidivism was at the high end of the distribution. As previously described in the methods section, for participants who did not recidivate, this value was calculated as the entire length of the follow-up period, and these youth had limited, if any, custody time for which follow-up time would need to be adjusted. Furthermore, because these values were obtained from actual criminal justice records, these cases were deemed to be legitimate and the decision was made to retain them without alteration in order to have the dataset be more representative of the study population.

3.1.3 Statistical assumptions. Normality of continuous predictor and criterion variables was assessed by examining both histograms and skewness and kurtosis values. As described in Field (2013), skewness and kurtosis z-scores greater than +/- 1.96 were considered statistically significant at the $p < .05$ level, whereas z-scores +/- 2.58 indicate statistical significance at $p < .01$. Consistent with recommendations provided by Tabachnick and Fidell (2013) for small to moderate samples, a conservative alpha level
of $p < .01$ was used. Based on this criterion, several variables were not normally distributed. Educational level was negatively skewed ($z$-score = -3.20), as was severity of recidivism offences ($z$-score = -5.45). Time to recidivism (controlled for time in custody) was positively skewed ($z$-score = 12.45) with positive kurtosis ($z$-score = 12.48). For the risk and protective factor scores, the YLS/CMI Total Score was negatively skewed ($z$-score = -5.49) and the RSCA Reactivity total $t$-score had positive kurtosis ($z$-score = 4.20). All other continuous independent and dependent variables were normally distributed. Based on the nature of the sample and type of data collected, violations of normality for these variables is not surprising.

Although transformation can be used to improve the normality of skewed variables, there are numerous limitations to data transformation that made it undesirable in the current study. Specifically, transformation changes the nature of the variable, in that although the relative order of scores is retained, differences between scores are no longer meaningful (Feng et al., 2014; Osborne, 2002). For example, an increase by one unit in time to recidivism would no longer be equivalent to one day. This substantially affects the ability of the data to be interpreted and to be meaningful. Transformation is also less effective with negatively-skewed variables (Feng et al., 2014; Osborne, 2002). Additionally, because many of the variables with normality violations were objectively measured or clinician-rated, transformation would not represent the true nature of the data. Furthermore, many of the analyses used in the current study are robust to deviations from normality (i.e., logistic regression, moderation analysis, survival analysis; Tabachnick & Fidell, 2013). For these reasons, it was decided to not transform those variables that violated the assumption of normality. It is recognized that this
decision may have limited the power for the survival analyses; however, maintaining the representativeness and interpretability of the data was viewed as necessary.

Linearity was examined using bivariate scatterplots. No significant concerns with the linearity of the independent variables were identified. Levene’s test was used to assess for homogeneity of variance. For variables in which there was significant heterogeneity of variance, the values for which equal variances are not assumed were reported. No evidence of multicollinearity between the predictor variables was found by examining tolerance values.

3.1.4 **Multivariate outliers.** Following treatment of univariate outliers and violations of statistical assumptions, multivariate outliers were examined using Mahalonobis distance. A conservative probability estimate (i.e., $p < .001$) was used to evaluate multivariate outliers, as recommended by Tabachnick and Fidell (2013). Using this criterion, no multivariate outliers were found. Therefore, no further examination was required and all cases were retained.

3.2 **Hypothesis Testing**

In instances where multiple group comparisons were conducted and there was concern that Type I error would be elevated, a conservative alpha value (i.e., $p = .01$) was used to balance the risk of both Type I and Type II error (Tabachnick & Fidell, 2013).

3.2.1 **Sample characteristics.** The demographic characteristics of the sample have been previously described and are presented in Table 2. Average scores and qualitative descriptors for the assessment tools (i.e., YLS/CMI, RSCA, cognitive ability, academic achievement) can be found in Table 3. At the time of assessment, the sample
was characterized as High Risk based on the YLS/CMI total score ($M = 22.86$, $SD = 7.48$), displayed Below Average resiliency across the RSCA Mastery ($M = 42.72$, $SD = 9.44$) and Relatedness ($M = 44.34$, $SD = 10.53$) scales and Above Average difficulties on the RSCA Reactivity scale ($M = 58.39$, $SD = 11.05$). They also demonstrated Average cognitive abilities ($M = 89.61$, $SD = 11.72$) and Below Average reading abilities ($M = 89.41$, $SD = 15.88$). Due to the fact that so many participants were missing scores on the cognitive ability measure, differences between youth who had been administered cognitive screening measures and those who had not were investigated using chi-square analysis for categorical variables and independent samples $t$-tests for continuous variables. Due to multiple comparisons, a conservative value of $p < .01$ was used to determine statistical significance. The results of these group comparisons are summarized in Table 4. The only variable on which the group who had cognitive ability measures administered and the group with no cognitive ability measure significantly differed at $p < .01$ was the YLS/CMI risk level, $X^2(3) = 11.57$, $p = .009$. Specifically, a greater proportion of participants who had been administered cognitive ability measures were classified as High (68.7% vs. 48.9%) or Very High (4.8% vs. 1.1%) risk, whereas fewer participants in this group fell in the Low (2.4% vs. 7.8%) or Moderate risk (24.1% vs. 42.2%) ranges.

Research Question 1 aimed to describe the characteristics of youth recidivists. The recidivism rate in the current study, in the form of any new criminal charges received over the follow-up period, was 86.7%. Excluding technical charges (i.e., breach of conditions, failure to comply), the general recidivism rate remained high at 82.1%. This suggests that the high general recidivism rate was not primarily due to youth breaching court-ordered conditions (e.g., probation orders), and represented new charges
for criminal behaviour. The hypothesis that recidivists would be predominantly male, of high risk, and would commit new non-violent offences of low to moderate offence severity was partially supported. As expected, and similar to the overall sample, recidivists were predominantly male (70%), Caucasian (63.3%), and rated as High Risk on the YLS/CMI (63.3%). Recidivists had a mean age of 15.55 years ($SD = 1.50$) and education level of approximately Grade 8 ($SD = 1.22$). The majority of recidivists (56.7%) had previous convictions prior to the index offence(s). However, the type and severity of re-offences committed were not as predicted. Detailed recidivism information for the 150 participants who recidivated is provided in Table 5.

Recidivism rates by type of offence were as follows: technical (e.g., breach of probation conditions, failure to comply; 80.3%), non-violent (e.g., break and enter, theft; 68.8%), violent (e.g., assault, uttering threats; 65.3%), drug (e.g., possession, trafficking; 28.3%), and sexual (e.g., sexual interference, sexual assault; 5.8%). These rates represent the proportion of youth that received any new charges of each offence type over the follow-up period, and are non-exclusive (i.e., youth could be represented in multiple categories). The percentages across offence types equal to over 100% because the majority of youth who recidivated (91.3%) committed multiple types of recidivism. In fact, the average number of recidivism events (i.e., distinct dates on which new offences were committed) per youth over the follow-up period was 12.92 ($SD = 12.42$; range = 1 to 61).

The most common recidivism offences were breach of conditions/failure to comply (78.6%), assault (60.1%), theft (51.4%), mischief/property damage (39.9%), and uttering threats (35.3%). Notably, a significant minority of youth received new charges
for serious violent offences including robbery (19.1%), kidnapping/forcible confinement (7.8%), or manslaughter/attempted murder/murder (4.6%). Thus, although technical and non-violent offences were very common, a significant proportion of participants engaged in violent recidivism. The average severity of participants’ most serious recidivism offence (MSO) was 20 (maximum score = 25), which is equivalent in severity to drug trafficking/importing. A significant proportion of youth (42.2%) received new charges for serious violence (i.e., MSO of 24) or manslaughter/attempted murder/murder (i.e., MSO of 25). This finding indicates that participants tended to receive new charges for offences of relatively high severity over the follow-up period. The average time to first recidivism event (i.e., date of first new criminal charge(s) after adjusting for time spent in custody) was 250 days (i.e., 8.35 months). At the time of first re-offence, participants had a mean age of 16.32 years ($SD = 2.02$).

Research Question 2 examined group differences between participants who did and did not recidivate during the follow-up period using chi-square analysis for categorical variables and independent samples $t$-tests for continuous variables. Due to multiple comparisons, a conservative value of $p < .01$ was used to determine statistical significance. Full results of these group comparisons can be found in Table 6. Recidivists were expected to be of higher risk and be more likely to have prior convictions, be male, and be of non-Caucasian ethnicity than youth who did not recidivate. This hypothesis was partially supported.

Recidivists and non-recidivists differed on several characteristics. The only demographic factor for which significant group differences were found was gender, $X^2(1) = 13.68, p < .001, Cramer’s V = .28$. Specifically, as expected, the proportion of
females in the non-recidivist group (69.6%) was significantly higher than in the recidivist group (30.0%). Thus, gender was controlled for in future regression analyses. Recidivists were also more likely to have had previous convictions prior to the index offence(s), $X^2(1) = 15.70, p < .001, V = .30$. In regards to risk, recidivists had a higher YLS/CMI total score than non-recidivists, $t(25.27) = 4.33, p < .001$, as well as higher scores on each risk/need subscale except for education and leisure/recreation. YLS/CMI risk rating categorizations also differed between groups, $X^2(3) = 29.36, p < .001, V = .41$, such that there was a higher proportion of Low (2% of recidivists, 26.1% of non-recidivists) and Moderate (31.3% of recidivists, 47.8% of non-recidivists) Risk youth in the non-recidivist group, whereas the recidivist group had a greater proportion of High (63.3% of recidivists, 26.1% of non-recidivists) and Very High (3.3% of recidivists, 0% of non-recidivists) Risk participants. No group differences were observed for age, ethnicity, educational level, index offence type, index offence severity, length of follow-up period controlled for time in custody, any of the RSCA scales or subscales, or cognitive or academic ability. There was a trend for the recidivist group to have lower scores on the measure of cognitive ability, $t(81) = -2.45, p = .016$, but this was not statistically significant at the more conservative alpha level used for these comparisons.

3.2.2 Predictive validity of protective factors. Research Questions 3 and 4 assessed whether the protective factor domains were predictive of recidivism and which domains were the strongest predictors. Hierarchical binomial logistic regression analysis was conducted to examine the prediction of general recidivism. Logistic regression is used to predict a particular outcome (i.e., whether the individual committed recidivism) from a set of predictor variables. Advantages of logistic regression include that it can be
conducted with a combination of continuous and categorical predictor variables and does not assume that variables are normally distributed (Tabachnick & Fidell, 2013). General recidivism (yes/no) served as the criterion variable. Gender was entered in step one to control for its effects on the relationship between protective factors and recidivism status. The protective factor domain scores (i.e., personal, social, emotional, cognitive) were entered in step two to evaluate the ability of each protective factor domain to predict recidivism. Due to the difference in sample size for the cognitive ability score, the analysis was repeated without the cognitive protective factor domain to assess whether results would differ for the other variables with a larger sample size.

Results of the regression analysis with all four protective factor domains included are summarized in Table 7. Step one accounted for a significant amount of variance in general recidivism, $\chi^2(1) = 8.40, p = .004$, Nagelkerke’s $R^2 = .18$. Gender was a significant predictor of general recidivism, whereby the odds of general recidivism were 7.96 times greater for males. Step two was also significant, $\chi^2(4) = 9.84, p = .043$, Nagelkerke’s $R^2 = .36$, suggesting that the protective factor domains incrementally predicted general recidivism over and above the effect of gender. However, the only protective factor variable that was a significant individual predictor of general recidivism was the cognitive ability standardized score. Specifically, for each unit increase in cognitive ability, the odds of general recidivism decreased by .89. Thus, the hypothesis that all protective factor domains would be significant predictors of general recidivism was not supported.

The overall model correctly classified 88.0% of participants by recidivism status, $\chi^2(5) = 18.25, p = .003$. Although the model had high accuracy for predicting recidivists
(97.2% correct classification), accuracy for predicting non-recidivists was less than chance (27.3% correct classification). When the analysis was repeated without the cognitive protective factor domain (i.e., with the larger sample size; see Table 7), the pattern of results was generally consistent with that obtained from the first analysis. Specifically, step one was again significant, $\chi^2(1) = 13.04, p < .001$, Nagelkerke’s $R^2 = .13$. However, without the cognitive protective factor domain, step two was not significant, $\chi^2(3) = .91, p = .824$, Nagelkerke’s $R^2 = .14$, and none of the RSCA scales were significant predictors of general recidivism. Thus, without cognitive ability included, the protective factor domains did not incrementally contribute to the prediction of general recidivism above and beyond the effects of gender.

Due to the high incidence of violent recidivism in the sample, it was of interest whether the protective factor domains might differentially predict violence, compared to general recidivism. Therefore, supplementary hierarchical logistic regression analyses were conducted with violent recidivism as the outcome variable. As with the prediction of general recidivism, the effect of gender was controlled for by entering it in the first step, and the analysis was repeated with and without cognitive ability included. In the analysis with cognitive ability included, the first step accounted for a significant proportion of the variance in violent recidivism, $\chi^2(1) = 11.67, p = .001$, Nagelkerke’s $R^2 = .18$. Gender was a significant individual predictor of violent recidivism, with male gender associated with 5.07 times greater odds of violent recidivism. However, step two, containing the protective factor domains, did not significantly predict violent recidivism, $\chi^2(4) = 1.45, p = .84$, Nagelkerke’s $R^2 = .20$, and none of the protective factor variables were significant predictors of violent recidivism (all $p$s $> .05$). Full results of this
regression analysis are reported in Table 8. Relative to the prediction of general recidivism, gender and the protective factor domains were poorer predictors of violent recidivism; at step two, the model was only able to correctly classify 69.9% of participants by violent recidivism outcome, $\chi^2(5) = 13.12, p = .022$. When cognitive ability was not included in the model, the pattern of results remained the same.

To investigate predictors of time to recidivism (Research Questions 3 and 4), a hierarchical Cox regression analysis was conducted with the time to first recidivism event (i.e., time free in the community from time of assessment to date of first new charge, adjusted for time spent in custody) as the criterion variable. Cox regression is able to deal with time criterion variables and regression coefficients demonstrate the relative effect of each covariate (i.e., predictor variable) on survival time for general recidivism (Tabachnick & Fidell, 2013). Gender was entered in step one to control for its potential effect on time to recidivism. Overall, this step was non-significant, $\chi^2(1) = 2.46, p = .117$. Step two, in which the protective factor domain scores were entered, also did not significantly predict time to recidivism, $\chi^2(5) = 4.86, p = .434$, and did not improve on the previous step’s predictive ability, $\chi^2(4) = 2.28, p = .684$. None of the protective factor domains were significant predictors of time to recidivism (all $p$s > .05). Thus, the hypothesis that each protective factor domain would significantly predict time to recidivism was not supported.

As with the analysis for the prediction of the likelihood of general recidivism, this analysis was repeated without cognitive ability included to increase the sample size for this analysis. In the full sample, step one, containing gender, did significantly predict time to recidivism, $\chi^2(1) = 6.26, p = .012$, suggesting that the failure to find this
effect in the subsample with cognitive ability included may have been due to limited power. Gender was a significant predictor of time to recidivism, Wald’s $\chi^2(1) = 6.16, p = .013$, with male gender associated with a 1.56 times greater risk of faster time to recidivism. However, consistent with the first Cox regression analysis, step two continued not to be a significant predictor of time to recidivism, $\chi^2(4) = 7.24, p = .124$, and neither were any of the RSCA scales (all $p$s > .05).

Kaplan-Meier survival analysis also was conducted for each protective factor domain to investigate differences in time to first re-offense based on various levels of the protective factor (i.e., low, moderate, high). For each domain, levels were coded based on $T$-scores for the RSCA scales and standardized scores for the cognitive ability variable. Thus, levels were consistent with the norms of the measures used and associated qualitative descriptors. Specifically, a low level was coded as individuals who scored below the Average range specified for each protective factor domain score (i.e., $T$-scores < 46 on the RSCA scales, standardized scores < 90 for cognitive ability); a moderate level included scores falling within the Average range (i.e., $T$-scores of 46 to 55 on the RSCA scales, standardized scores of 90 to 110 for cognitive ability); and a high level included scores greater than the Average range (i.e., $T$-scores > 55 on the RSCA scales, standardized scores > 110 for cognitive ability). Survival analysis examines the length of time to a particular outcome of interest (i.e., recidivism) based on one or more factors referred to as covariates (i.e., each protective factor domain). The advantage of survival analysis is that it can examine the length of time until an outcome rather than just whether the outcome occurs, it can also account for cases that never engage in the outcome of interest (i.e., censored cases) and it can compare
survival curves across levels of a variable using the Log Rank test (Tabachnick & Fidell, 2013).

The first survival analysis explored whether scores on the RSCA Mastery scale was related to time to first recidivism event. There was no significant difference in time to recidivism for youth with varying levels of mastery scores (i.e., Low, Moderate, High), Log Rank $\chi^2(2) = 1.04, p = .60$. Median survival time was 134 days ($SE = 22.78$, range $= 0 – 3228$) for the Low mastery group ($N = 109$), 248 days ($SE = 49.52$, range $= 1 - 3334$) for the Moderate mastery group ($N = 49$), and 148 days ($SE = 102.41$, range $= 10 - 2607$) for the High mastery group ($N = 15$). See Figure 1 for the graphical representation of this result. For the second survival analysis, which investigated differences in time to recidivism by level of the RSCA Relatedness scale, results were again not statistically significant, Log Rank $\chi^2(2) = 4.63, p = .099$ (see Figure 2). Visual inspection of the graph revealed a slight separation of the High relatedness group ($N = 22$; Median survival time $= 60$ days, $SE = 59.24$, range $= 3 - 1597$) from the Low relatedness group ($N = 96$; Median survival time $= 135$ days, $SE = 37.23$, range $= 2 - 3228$) and the Moderate relatedness group ($N = 55$; Median survival time $= 203$ days, $SE = 54.02$, range $= 0 - 3334$). The Low and Moderate relatedness groups had minimal separation on the survival graph and re-offended more slowly than the High relatedness group.

The third survival analysis compared time to first recidivism event by scores on the RSCA Reactivity scale. Results indicated that there was a significant difference in time to recidivism between groups, Log Rank $\chi^2(2) = 15.58, p < .001$. Figure 3 depicts the survival curve for reactivity. Specifically, there was a visual separation between the
survival curves for all three reactivity levels. The Low reactivity group \( (N = 19; \text{Median survival time} = 409 \text{ days, } SE = 404.82, \text{ range} = 5 - 3334) \) had the longest survival time, followed by the High reactivity group \( (N = 103; \text{Median survival time} = 172 \text{ days, } SE = 39.94, \text{ range} = 0 - 3228) \). The Moderate reactivity group \( (N = 51; \text{Median survival time} = 94 \text{ days, } SE = 29.07, \text{ range} = 1 - 1468) \) had the shortest time to recidivism.

The fourth survival analysis, examining differences in time to recidivism based on cognitive ability, was conducted with the subsample of youth who had been administered cognitive functioning measures \( (N = 83) \). There was no significant difference in the time to the first recidivism event between groups, Log Rank \( \chi^2(2) = 3.96, p = .138 \). Median survival time was 135 days \( (SE = 61.69, \text{ range} = 0 - 1597) \) for the Low cognitive ability group \( (N = 47) \), 106 days \( (SE = 18.43, \text{ range} = 3 - 2607) \) for the Moderate cognitive ability group \( (N = 31) \), and 425 days \( (SE = 186.23, \text{ range} = 100 - 2666) \) for the High cognitive ability group \( (N = 5) \). Although the results were not significant, visual inspection of the survival curve (see Figure 4) revealed some separation between groups, with the High cognitive ability group having a longer time to recidivism than both the Low and Moderate cognitive ability groups. This suggests that the lower sample size of this analysis may have limited the ability to find significant results.

3.2.3 Effects of demographic factors. Research Question 5 explored the moderating effects of youth demographic and descriptive characteristics (i.e., gender, age, ethnicity, index offence type, index offence severity) on the relationship between each protective factor domain and recidivism outcome through the use of moderation analyses using bootstrapping methods (i.e., resampling with replacement) via the SPSS
macro *Process*. Specifically, 10,000 bootstrap samples were used to determine whether the conditional effect of each protective factor domain on recidivism outcome varied as a result of specific demographic or index offence characteristics. Figure 5 provides a visual representation of the moderation model. The *Process* macro allows for moderation analyses using both continuous and dichotomous moderator variables. For continuous moderator variables (i.e., age, index offence severity), the effect of the independent variable on the dependent variable was conducted at three levels of the moderating variable (i.e., mean and plus/minus one standard deviation from the mean; Hayes, 2013). The effect of gender, ethnicity, and index offence type were examined as categorical variables, with the effect of the independent variable on the dependent variable conducted for each category of the moderating variable. According to Hayes (2013), significant moderation is achieved if the interaction term between the independent variable (i.e., protective factor domain score) and moderator variable (e.g., age) is statistically significant. The conditional effect of the moderating variable on recidivism outcome at the various levels of the protective factor domain is only interpreted if the interaction term is significant (Hayes, 2013).

Two series of multiple moderation analyses were conducted. The first series used general recidivism (yes/no) as the dependent variable and examined moderation of demographic and index offence characteristics for each of the protective factor domain scores (i.e., mastery, relatedness, reactivity, cognitive ability). The second series used time to recidivism as the dependent variable. Due to the use of multiple analyses, the conservative alpha value ($p < .01$) was used to evaluate statistical significance. None of the demographic or index offence characteristics significantly moderated the
relationship between any of the protective factors and either recidivism outcome variable (all $p$s > .05 for interaction terms). All bias corrected 95% confidence intervals for the interaction terms contained zero, which suggests that it was not likely that there were significant group differences between the protective factor domains and recidivism outcome for any of these moderators. These results are contrary to the hypothesis that both gender and age would be significant moderators. As per the recommendations provided by Hayes (2013), due to the lack of any significant interaction terms, further interpretation of the effect of the moderators on the relationship between protective factor domains and recidivism was not conducted.

3.2.4 Incremental predictive ability of protective factors. Research Question 6 investigated whether protective factors accounted for incremental variance in predicting recidivism, above and beyond the effects of risk level. To predict general recidivism, hierarchical binomial logistic regression analyses were conducted, with general recidivism (yes/no) as the criterion variable. Results of this analysis are summarized in Table 9. As with the previous logistic regression analyses, gender was entered in step one to control for its effects on recidivism. Since this step was identical to the previous hierarchical logistic regression analysis, results are not repeated here. Step two, containing the YLS/CMI total score, was significantly predictive of general recidivism, $\chi^2(1) = 13.98, p < .001$, Nagelkerke’s $R^2 = .44$. The YLS/CMI total score was a significant predictor of general recidivism, such that for each unit increase in the YLS/CMI total score, the odds of general recidivism increased by 11.33. When the protective factor domain scores were entered in step three, no incremental predictive ability was added to the model, $\chi^2(4) = 7.47, p = .113$, Nagelkerke’s $R^2 = .56$, indicating
that the addition of the protective factor domains did not predict general recidivism above and beyond the effects of risk. However, the cognitive ability standardized score was a significant individual predictor of general recidivism within this step, whereby each unit increase in cognitive ability standardized score was associated with a decrease of .89 in the odds of general recidivism. Thus, the hypothesis that all protective factor domains would incrementally predict general recidivism was only partially supported. The overall model correctly classified 90.4% of participants based on their recidivism status, $\chi^2(6) = 29.85, p < .001$. However, it is relevant to note that the classification accuracy was much higher for recidivists (97.2% correct) than for non-recidivists (45.5% correct).

When the logistic regression was repeated in the whole sample without the cognitive ability standardized score included in the model, results were consistent in that step one, $\chi^2(1) = 13.04, p < .001$, Nagelkerke’s $R^2 = .13$, and step two, $\chi^2(1) = 25.55, p < .001$, Nagelkerke’s $R^2 = .37$, were both significantly predictive of general recidivism. Gender and YLS/CMI total score remained significant individual predictors. Step three was again not significant, $\chi^2(3) = .21, p = .98$, Nagelkerke’s $R^2 = .37$, and none of the RSCA scales emerged as significant predictors of general recidivism (all $p$s > .05). The overall model correctly classified 86.7% of participants based on recidivism status (98.7% correct classification of recidivists, 8.7% correct classification of non-recidivists), $\chi^2(5) = 38.80, p < .001$.

Again, supplemental hierarchical logistic regression analyses, with and without cognitive ability included, were conducted with violent recidivism as the outcome variable. The results are presented in Table 10. In the analysis with cognitive ability
included, the first step, including gender, significantly predicted violent recidivism, $\chi^2(1) = 11.67, p = .001$, Nagelkerke’s $R^2 = .18$, and male gender was significantly associated with increased odds of violent recidivism. Step two also accounted for significant variance in violent recidivism outcome, $\chi^2(1) = .681, p = .009$, Nagelkerke’s $R^2 = .27$. For each unit increase in the YLS/CMI total score, the odds of violent recidivism increased by 3.16 times. The addition of the protective factor domains in step three did not improve the ability of the model to predict violent recidivism, $\chi^2(4) = .63, p = .96$, Nagelkerke’s $R^2 = .28$. None of the protective factor scores were significant individual predictors of violent recidivism (all $p$s > .05). Thus, neither the protective factor domains as a whole, nor any of the individual factors themselves significantly predicted violent recidivism once the effects of gender and risk were accounted for in the second step. The overall model correctly classified 71.1% of participants by violent recidivism status, $\chi^2(6) = 19.11, p = .004$, again demonstrating poorer classification accuracy than for the prediction of general recidivism. The pattern of results was consistent when the analysis was repeated without cognitive ability in the model.

To predict time to recidivism, hierarchical Cox regression analyses were conducted, with the time to first recidivism event (controlled for time spent in custody) as the criterion variable. The entry of predictor variables in steps one to three was the same as those described above. In the subsample ($N = 83$) with the cognitive ability standardized score available, step one was not significant, $\chi^2(1) = 2.46, p = .117$, but the model at step two was significantly predictive of time to recidivism, $\chi^2(2) = 22.63, p < .001$, and the addition of the YLS/CMI total score significantly improved the predictive ability of the model, $\chi^2(1) = 22.48, p < .001$ (see Table 11 for full results). Although
gender had not been a significant predictor at step one, both gender and the YLS/CMI total score were significant predictors of time to recidivism at step two, such that male gender and higher YLS/CMI scores were associated with an increased risk of recidivism. Step three did not improve the ability of the model to predict time to recidivism, $\chi^2(4) = 1.28, p = .864$, and none of the four protective factor domains were significant individual predictors above gender and risk level (all $p$s < .05). Therefore, the hypothesis that each protective factor domain would incrementally predict time to recidivism was not supported.

The Cox regression analysis was repeated with the full sample ($N = 173$), with the cognitive protective factor domain excluded from the model (see Table 11). In this analysis, step one was significant, $\chi^2(1) = 6.26, p = .012$, and gender was a significant predictor of time to recidivism, Wald’s $\chi^2(1) = 6.16, p = .013$. Specifically, male gender was associated with a 1.56 times greater chance of recidivism. The addition of the YLS/CMI total score in step two improved the predictive ability of the model, $\chi^2(1) = 34.21, p < .001$, and the YLS/CMI total score was also a significant predictor of time to recidivism, Wald’s $\chi^2(1) = 29.89, p < .001$, with each unit increase in the YLS/CMI total score increasing the odds of recidivism by 2.21. Again, no significant predictive ability was added to the model by the addition of the protective factor domains in step three, $\chi^2(3) = 1.02, p = .80$, and none of the RSCA scales were significant predictors of time to recidivism (all $p$s > .05).

3.2.5 Moderating effect of protective factors. Moderation analyses were conducted to examine Research Question 7 in regard to whether the relationship between risk level and recidivism varied as a function of the level of each protective
factor domain (i.e., low, moderate, high). Specifically, it was investigated whether the effect of a youth’s level of risk (i.e., YLS/CMI total score) on recidivism outcome varied at different levels of each protective factor domain. To determine whether significant moderation occurred, the criteria outlined by Hayes (2013) again was used; specifically, if the interaction term between the independent variable (i.e., YLS/CMI total score) and moderator variable (i.e., protective factor domain) is significant, then moderation is present. Moderation analyses were conducted separately for the dependent variables of general recidivism (yes/no) and time to recidivism. All four protective factor domains were examined as moderators for each recidivism outcome. The moderation model is depicted in Figure 6. Contrary to the hypothesis that all protective factor domains would be significant moderators, none of the protective factor domains significantly moderated the relationship between the YLS/CMI total score and either recidivism outcome (for all interaction terms, $p > .05$ and bias corrected 95% confidence intervals contained zero). As with the prior moderation analyses, none of the effects were followed-up further.
CHAPTER FOUR: DISCUSSION

The purpose of the current dissertation was to investigate the role of individual protective factors in predicting youth recidivism. Related to the outcome of youth criminal behaviour, protective factors have been conceptualized as characteristics of a youth and his/her life circumstances that decrease the likelihood of offending, either through a direct relationship or by moderating the effect of risk factors (Fougere & Daffern, 2011). Although protective factors can be related to a youth’s social environment (e.g., social support, school, peers), family, or individual characteristics, the focus in the current dissertation was on individual characteristics. Despite the fact that the importance of incorporating protective factors into risk assessment has become increasingly recognized (e.g., Lodewijks et al., 2010; Rennie & Dolan, 2010), there are significant gaps in the research literature that limit this recommendation from being implemented in practice. Whereas much is known about the risk factors that are most strongly associated with youth recidivism, individual protective factors that help youth desist from offending are not well understood. Although measures assessing protective factors exist, they have either not been developed specifically for use with justice-involved youth or have limited research related to their predictive validity for recidivism. The current dissertation, therefore, sought to address these gaps in an effort to clarify the role of individual protective factors in youth risk assessment.

The primary goal of the current study was to assess whether individual protective factors significantly predicted youth recidivism. Seven research questions were developed related to: (1) whether protective factors would demonstrate incremental predictive ability over and above risk factors; (2) comparing the predictive ability of the...
four individual protective factor domains assessed (i.e., personal, social, emotional, cognitive); (3) examining whether protective factors had a direct and/or indirect effect on recidivism; and (4) investigating whether youth demographic or index offence characteristics moderated the relationships between protective factor domains and recidivism.

4.1 Sample Characteristics

Prior to discussing the results relevant to the research questions, it is first pertinent to review the characteristics of the sample as a whole. Participants in the current study were primarily male, which is consistent with both the gender composition of the IWK Youth Forensic Services (YFS) program and the population heard by Canadian Youth Courts (i.e., 77%; Miladinovic, 2016). However, the current study made specific efforts to include enough female cases to adequately assess gender differences. As such, while 65% of the current sample was male, this represents an under-representation of the proportion of male youth assessed by YFS over the study period. Consistent with the Nova Scotian population, participants were primarily Caucasian. They were, on average, approximately 16 years old, with an eighth grade education level, suggesting that many of them were behind academically based on the education level expected for their age (i.e., closer to Grade 10). The majority of youth seen in Canadian Youth Courts are older adolescents (i.e., 15 years of age or older; Miladinovic, 2016), which is consistent with the current sample.

It appears that youth in this study may not be representative of the Canadian justice-involved youth population. A significant number of participants (61%) had committed violent index offences that were of fairly high severity (i.e., comparable to a
Weapons offense) and the index offence characteristics were more serious as compared to offences most commonly heard by Canadian Youth Courts. This discrepancy is likely due to the sample having been court-referred for assessment. The commission of more serious (i.e., violent) index offences was likely a factor in identifying cases for assessment referral by the courts. Additionally, the average risk score on the YLS/CMI for the current sample fell within the High Risk range and the majority of youth were classified as High (58%) or Moderate (34%) Risk. In comparison to other studies (Schmidt et al., 2016; Wershler et al., 2018), the risk score and corresponding risk classifications were much higher in the current sample.

The current sample is comparable to samples of “serious young offenders” who received assessment and/or treatment services from the specialized Young Offender Team in Saskatchewan (Olver et al., 2012) and violent youth in British Columbia at either a closed custody facility or outpatient forensic psychiatric facility (Catchpole & Gretton, 2003). Much like the participants in the current dissertation, the youth in these other samples had committed violent and/or serious index offences and the majority were classified as High Risk on the YLS/CMI (Catchpole & Gretton, 2003; Olver et al., 2012). YLS/CMI scores in the current sample are also even higher than in some Canadian samples with youth who have been referred for court-ordered assessment. For example, only 19% of Schmidt et al.’s (2011) sample were classified as High/Very High Risk on the YLS/CMI and the average YLS/CMI score in the study by Schmidt et al. (2005) was within the Moderate Risk range. Thus, the current sample is best conceptualized as a high risk, serious youth offender subgroup of Canadian justice-involved youth.
Although information is not available to assess specifically how youth who were referred to YFS for an assessment by Youth Courts in Nova Scotia differ from youth who were not referred, it is likely that youth who received assessment through YFS committed more serious index offences and/or were viewed as more complex cases in which comprehensive assessment was needed to make decisions, such as whether the youth’s risk could be managed in the community and what types of intervention/services would be required to mitigate risk. Previous research examining assessment referral patterns from Canadian youth courts under the previous youth criminal justice legislation (i.e., the Young Offenders Act) supports this position. For example, Jaffe and colleagues (1985) found that referred youth tended to have extensive involvement with a variety of other agencies and services, suggesting that referred cases were complex in nature. Jack and Ogloff (1997) found that both offence-related characteristics (e.g., severity of offence) and subjective judgements related to how unusual or related to mental health factors cases were perceived to be were associated with cases being referred for assessment. It would be useful to more systematically investigate referral patterns for youth court-ordered assessments conducted by YFS in order to meaningfully comment on how the current sample is likely to differ from all justice-involved youth in Nova Scotia or across Canada. It is also important to note that YFS referrals come from youth courts across the province, and referral decisions may not have been consistent across judges or jurisdictions.

In regard to the broad individual protective factor domains of interest in the current study, mean scores were indicative of resiliency deficits on all three RSCA scales (i.e., Below Average Mastery, Below Average Relatedness, Above Average
Reactivity). This pattern is consistent with previous research that has generally found that youth offender samples are characterized by low resiliency and/or few protective factors (Born et al., 1996; Carr & Vandiver, 2001; Lodewijks et al., 2010; Rennie & Dolan, 2010; Schmidt et al., 2011; Shepherd, Luebbers, & Ogloff, 2016). Compared to general population norms, justice-involved youth also had lower resiliency as measured by the RSCA (Mowder et al., 2010). The mean scores on the RSCA scales in the current sample are very comparable to those reported by Mowder et al. (2010).

For cognitive ability, participants scored at the very low end of the Average range, with most participants falling in the Low Average (42%) or Average (37%) ranges. These results may underestimate the cognitive ability of the sample as a whole because cognitive ability may have only been assessed if it was identified as a potential concern. Thus, the subsample of youth with cognitive ability scores is likely to have a higher proportion of youth with lower cognitive ability than a typical justice-involved youth sample. The mean cognitive ability scores in the current study are similar to those found in a sample of court-referred youth in British Columbia (Gretton, Hare, & Catchpole, 2004). A significant proportion of the current sample had deficits in their cognitive abilities as compared to general population normative information on same-age youth. Furthermore, few youth (i.e., only 6%) had cognitive abilities at a level regarded as a strength or having a protective effect in relation to offending (i.e., above average abilities; Ttofi et al., 2016). These results speak to the importance of assessing cognitive ability and providing the court and treatment providers with information about a youth’s specific cognitive deficits and how these deficits might relate to future behaviour.
4.2 Characteristics of Youth Recidivists

Research Questions 1 and 2 aimed to describe the characteristics of youth who recidivated over the follow-up period and to identify differences between recidivists and non-recidivists. The general recidivism rate, in the form of any new criminal charges received over the follow-up period, was very high, at almost 87%. Even when technical offences were excluded, the general recidivism rate was still 82%. This rate can be compared to a 45% rate of recidivism among youth involved with Canadian youth courts over a 10 year follow-up period (Carrington, Matarazzo, & deSouza, 2005). The recidivism rate in the current study is also higher than that found in several other studies, both in Canada (e.g., Olver et al., 2012; Schmidt et al., 2016; Wershler et al., 2018) and in other countries (e.g., Fougere et al., 2015; Lodewijks et al., 2010; Shepherd et al., 2016). However, a Canadian study with a similar sample to the current study (i.e., court-referred serious offending youth) over a comparable follow-up length (i.e., 10 years) found a general recidivism rate of 96% (Gretton et al., 2004).

The violent recidivism rate in the current study (65%) is also much higher than in many recent Canadian studies (i.e., 29% to 47%; Olver et al., 2012; Schmidt et al., 2011, 2016; Wershler et al., 2018). However, Gretton et al.’s (2004) serious youth sample had a violent recidivism rate quite comparable to the current study, at 68%. Thus, although there is significant variability in recidivism rates across studies, the current study found general and violent recidivism rates higher than in many other recent studies. However, these rates are generally consistent with what would be expected for high risk samples of court-referred youth with long follow-up periods.
It was hypothesized that youth who received new criminal charges over the follow-up period would be predominantly male, rated as high risk on the YLS/CMI, and would primarily commit new non-violent offences of low to moderate offence severity. These hypotheses were partially supported. The 150 youth who received new charges over the follow-up period were predominantly male and of High Risk on the YLS/CMI, as expected. Recidivists were also predominantly Caucasian, approximately 15 ½ years of age, and had an eighth-grade education level. However, in contrast to the hypothesis, the majority of youth (65%) received at least one violent charge over the follow-up period. In fact, the average number of new violent charges exceeded 7 charges and ranged from 0 to 66.

Severity of recidivism offences was also quite high, with the average severity of the most severe recidivism offence equivalent to drug trafficking/importing, which is classified as more severe than offences such as common assault, weapons offences, or theft on the MSO index (see Appendix B). Compared to index offences, the average severity of recidivism offences was slightly higher, and a significant proportion of participants (42%) received new charges for serious violence (e.g., assault causing bodily harm, robbery, kidnapping) or attempted murder/murder/manslaughter. On average, participants had almost 13 recidivism events (i.e., separate dates on which offences were committed), spent an average of 400 days in custody during the follow-up period, and took an average of 250 days (i.e., approximately 8 months) to commit their first re-offence (adjusted for custody time). Thus, recidivism occurred relatively quickly (i.e., within the first year of the follow-up period), consistent with other studies that have
found that youth tend to re-offend within two years (Olver et al., 2012; Mulder, Brand, Bullens, & Van Marle, 2011; Schmidt et al., 2011, 2016; Wershler et al., 2018).

Group differences between recidivists and non-recidivists were also examined. Recidivists were expected to be of higher risk than non-recidivists. In addition, it was hypothesized that recidivists would be more likely to have a prior criminal history, be male, and be of non-Caucasian ethnicity. Partial support was found for these hypotheses. As expected, recidivists had significantly higher risk scores than non-recidivists and were more likely to be categorized as High Risk. The recidivist group was also more likely to have prior convictions and had a higher proportion of male youth. However, the recidivist and non-recidivist groups did not differ on ethnicity.

The significant group differences in risk are consistent with a wealth of previous research supporting the predictive validity of the YLS/CMI (e.g., Olver et al., 2012; Schmidt et al., 2011, 2016), including a recent meta-analysis (Pusch & Holtfreter, 2017). The current results provide additional support for the use of the YLS/CMI, including with Nova Scotian youth, given the links between youths’ risk scores and general and violent recidivism. In addition to criminogenic needs, no differences between recidivists and non-recidivists were found for index offence characteristics (i.e., index offence type and severity). These relationships have not been previously examined for youth, but index offence characteristics are generally not associated with recidivism in adults in a reliable manner (e.g., Bonta & Andrews, 2017). The finding that recidivists were more likely to have previous convictions than non-recidivists is not surprising given that criminal history is a robust predictor of youth recidivism (e.g., Bonta & Andrews, 2017; Cottle et al., 2001; Mulder et al., 2010; Schmidt et al., 2011).
In regard to gender, the recidivist group did have a higher proportion of males than the non-recidivist group. In fact, the non-recidivist group was predominantly female (70%). However, it is important to note that females had, on average, a shorter follow-up period than males. This shorter period was because a greater number of recent assessments of female youth needed to be coded as the number of available female cases in the pool was low relative to male cases. However, there was no gender difference in time to recidivism (i.e., both males and females recidivated relatively quickly), suggesting that the different follow-up period lengths was not primarily responsible for the different recidivism rates. Additionally, the gender disparity in recidivism rates found in the current study is consistent with other research noting that males usually have significantly higher recidivism rates than females (e.g., Anderson et al., 2016; Lodewijks et al., 2008; Nicholls et al., 2015; Thompson & McGrath, 2011). However, other studies have failed to find gender differences in recidivism rates (e.g., Asscher et al., 2015; Meyers & Schmidt, 2008; Wershler et al., 2018). A concern in studies with justice-involved youth is whether the female sample is large enough to detect potential gender differences. Therefore, specific effort was made in the current study to have a sufficient sample of female cases to adequately conduct gender comparisons.

Group differences between recidivists and non-recidivists were not found for the demographic factors of age, ethnicity, or education level. No previous research has examined differences in recidivism based on age or education level, so there was no rationale to suggest that these characteristics would have differed as a result of recidivism status. Group differences in ethnicity were examined both for the four categories of Caucasian, Black/African-Nova Scotian, Indigenous, and other, as well as
for the broader groupings of Caucasian versus non-Caucasian ethnicity. Neither group comparison was statistically significant. Previous research has not found consistent ethnic differences, but studies that have found ethnic differences (e.g., Thompson & McGrath, 2011; Vincent et al., 2011) have been conducted in other countries with samples in which a larger proportion were identified as non-Caucasian. Studies that included samples with similar ethnic composition to the current study (e.g., Wershler et al., 2018) also did not identify ethnic differences in recidivism rate. It is important to consider that the restricted ethnic diversity in the current sample likely limited the ability to detect ethnic differences if they did exist.

Interestingly, there were no differences between recidivists and non-recidivists on the personal, social, or emotional protective factor domain scores. This finding is in contrast with previous research in which youth recidivists possessed significantly fewer protective factors than those who desisted (e.g., Carr & Vandiver, 2011; Lodewijks et al., 2010). However, these studies assessed protective factors as either present or absent or by the number of protective factors available, rather than dimensional measures to assess the degree of protective factor presence as done in the current study. Across both the recidivist and non-recidivist groups, RSCA scores were in the same range (i.e., Below Average Mastery, Below Average Relatedness, Above Average Reactivity), meaning that both groups had limited resiliency. Thus, in the current study, these protective factor domains were not a meaningful way to classify youth based on recidivism status. Although recidivists and non-recidivists did not differ on cognitive ability, there was a trend in the expected direction (i.e., lower scores for recidivists). Furthermore, mean scores for each group were in different descriptive categories (i.e.,
Low Average for recidivists, Average for non-recidivists). These results are generally consistent with a recent meta-analysis that found that fewer youth with above average intelligence re-offend compared to youth with lower cognitive functioning (Ttofi et al., 2016), and point to average or higher cognitive abilities as a potential protective factor contributing to criminal desistance.

4.3 Predictive Validity of Protective Factors

A key goal of the current dissertation was to examine the ability of the protective factor domains to predict general recidivism and time to recidivism (Research Question 3), as well as to determine the comparative predictive validity of the four protective factor domains: personal, social, emotional, and cognitive (Research Question 4). For Research Question 3, it was hypothesized that all four protective factor domains would predict recidivism (i.e., general recidivism and time to recidivism). This hypothesis was only partially supported; not all protective factors were significant unique predictors, and the relationships differed across the markers of recidivism. Based on the exploratory nature of Research Question 4, no specific hypotheses were made about which protective domains would be the strongest predictors of recidivism. Due to the relatively small number of participants who had cognitive ability scores, analyses were repeated with the full sample, with the cognitive ability variable excluded. However, the available cases with cognitive ability data were sufficient based on a priori power analysis suggesting that only 78 participants would be required to detect a medium effect size. The findings for each recidivism marker are discussed below.

4.3.1 Prediction of general recidivism. Gender, entered first to control for its effects on recidivism, was a significant predictor of general recidivism. As expected, the
protective factor domains as a whole significantly predicted general recidivism over and above the effect of gender and accounted for 36% of the variance in general recidivism. When the individual predictive validity of the protective factor domains was examined, cognitive ability was the only domain that significantly predicted general recidivism. Specifically, for each unit increase in the cognitive ability standardized score, the odds of general recidivism decreased by .89. Thus, as expected, cognitive ability was negatively associated with general recidivism, but the other three protective factor domains were not related to this variable.

When the analysis was repeated with cognitive ability excluded, gender was again a significant predictor, but the protective factor domains no longer significantly predicted general recidivism over and above the effect of gender, either as a group or individually. This pattern indicates that the inclusion of cognitive ability in the first analysis is likely what accounted for the ability of the block of protective factor domains to incrementally predict general recidivism above and beyond the effect of gender. For general recidivism, the answer to Research Question 4 is evident since cognitive ability was the only protective factor domain to demonstrate a significant predictive effect. Consistent with the current results, several previous studies (including two meta-analyses) also found significant associations between above average cognitive ability and lower rates of recidivism (Borum et al., 2002; Cottle et al., 2001; Efta-Breitbach & Freeman, 2004; Fougere et al. 2015; Ttofi et al., 2016).

Although it was hypothesized that each protective factor domain would predict general recidivism, the lack of significant predictive effects for any of the RSCA scales is not surprising given that the recidivist and non-recidivist groups both had resiliency
deficits and that these deficits were at similar levels. Although research examining the direct effects of resiliency on recidivism is limited, existing studies have found significant correlations between various protective factors (e.g., positive peer relations, strong social support, good academic achievement, prosocial leisure pursuits, positive response to authority, and resilient personality) and non-recidivism (Hoge et al., 1996; Lodewijks et al., 2010; Pearl et al., 2009; Rennie & Dolan, 2010). However, the protective factors in these previous studies were assessed using one-item measures (e.g., the resilient personality item of the SAVRY), which may account for the inconsistency with the current results. Alternatively, the source of information may account for the inconsistency; self-report data were used in this study for the personal, social, and emotional protective factor domains, whereas other studies (e.g., Lodewijks et al., 2010; Rennie & Dolan, 2010) have used assessor ratings of protective factors. Fougere et al. (2015) used a resiliency scale similar to the RSCA, but also did not find a significant relationship between resiliency and recidivism. Thus, dimensional measures of resiliency may not make a significant contribution to understanding recidivism.

Another factor that may explain differences in the results of this study and previous research is variation in which specific protective factors were assessed. It may be that significant associations between protective factors and recidivism found in other research reflects more emphasis on social or contextual/environmental protective factors and less emphasis on individual protective factors. For instance, the SAVRY protective factor items used in multiple previous studies include only one item that represents an individual protective factor, “resilient personality”. Thus, the ways in which protective factors are conceptualized and measured across studies can affect the results that are
obtained in regard to relationships between protective factors and recidivism. Furthermore, this variability limits the ability to compare results across studies.

4.3.2. Prediction of violent recidivism. Although not originally identified as a research question for the current study, supplemental analyses were conducted in light of the high violent recidivism rate in the sample to examine whether the protective factor domains would also predict violent recidivism. Gender significantly predicted violent recidivism, in that being male increased the odds of violent recidivism by 5.07 times. However, the block of the protective factor domains did not account for significant incremental variance in violent recidivism, and none of the four protective factor domains significantly predicted violent recidivism. This pattern of results was consistent when the analysis was repeated with the cognitive domain excluded.

Interestingly, 97% of general recidivists and 70% of violent recidivists were correctly classified by the model containing gender and the four protective factor domains.

It is unclear why cognitive ability would predict general recidivism but not violent recidivism. The research literature also does not indicate why cognitive ability may differentially relate to various markers of recidivism. Cognitive ability often has been examined in relation to general recidivism, without violence examined as a specific outcome (e.g., Cottle et al., 2001; Fougere et al., 2015; Ttofi et al., 2016). Even within meta-analyses, results are typically collapsed across specific recidivistic type variables. Fewer studies have specifically examined violent recidivism, and these findings have been inconsistent. For example, Andershed et al. (2016) found that less violent males had higher IQ scores than violent males, but Dubow et al. (2016) found no significant difference in IQ scores between violent and non-violent men. A potential explanation
for why cognitive ability may not be as important for predicting violence is the distinction between instrumental and reactive violence. Reactive violence is characterized as more impulsive and driven by emotional responses, whereas instrumental violence is proactive and goal-directed (Cornell et al., 1996). There is some indication that different cognitive/neurological factors may be related to reactive versus instrumental aggression (Blais, Solodukhin, & Forth, 2014). Therefore, it may be important to take into account different types of violence when examining the relationship between cognitive ability and violence, as cognitive ability may be protective for reactive violence, but could actually facilitate instrumental violence.

As with general recidivism, the failure of the personal, social, and emotional protective factor domains (i.e., the RSCA scales) to predict violent recidivism was initially surprising given the findings of studies (e.g., Lodewijks et al. 2010; Rennie & Dolan, 2010; Schmidt et al., 2011) in which the SAVRY protective factor scale significantly predicted non-violence. However, as described previously, the SAVRY protective factor scale assesses different factors and in a different way than the protective factor domains examined here. Furthermore, when examined individually, presence of the SAVRY resilient personality item has not significantly predicted violent recidivism (Lodewijks et al., 2010; Rennie & Dolan, 2010).

**4.3.3. Prediction of time to recidivism.** Examining time to recidivism is beneficial because it represents a harm-reduction approach to the extent that more subtle effects in which recidivism is not actually reduced but time to occurrence may be prolonged are identified. In this study, neither gender nor the protective factor domains significantly predicted time to recidivism in the subsample of youth with cognitive
ability scores. In the full sample (i.e., without cognitive ability), gender was a significant predictor of time to recidivism, suggesting that the null finding for gender in the subsample analysis may have been due to lack of power. The protective factor domains still did not significantly contribute to the prediction of time to recidivism in the full sample. Although associations between protective factors and time to recidivism have not been examined in previous research, it is not surprising that none of the protective factor domains were significant predictors given that none of the four protective factor domain scores significantly correlated with time to recidivism. Further, despite the study’s lengthy follow-up period, the mean time to recidivism was shorter than that reported in other studies (e.g., Olver et al., 2012; Schmidt et al., 2016). It may be that the positive effects of protective factors take more time to alter behaviour versus more immediate criminogenic factors and, therefore, had not had a chance to exert their effect before youth recidivated for the first time.

Given that previous research has found that youth with more protective factors take longer to recidivate than youth with fewer protective factors (Shepherd et al., 2016), the current study examined whether time to recidivism differed based on the level of each protective factor domain (i.e., low, moderate, high). However, the current study’s hypotheses only were partially supported. The one significant factor to emerge was the emotional protective factor domain (i.e., RSCA Reactivity). As expected, the Low reactivity group had the longest time to recidivism and demonstrated a visual separation from both the High and Moderate reactivity groups. Although it is surprising that the Moderate reactivity group had the shortest time to recidivism, there was minimal separation between the Moderate and High reactivity groups, so this difference
is not likely to be meaningful. These results suggest that Average emotion regulation abilities are not sufficient to exert a protective effect.

Although there were no significant differences across different levels of the relationship protective factor domain (i.e., RSCA Relatedness scale), there was a slight separation between groups on the survival curve. Youth in the High relatedness group had the shortest median time to recidivism relative to youth in the Low and Moderate relatedness groups. The direction of this trend was unexpected in that youth with better relationship skills (i.e., Above Average Relatedness scores) recidivated more quickly than youth in the other groups. It may be that there is an interaction between a youth’s relatedness skills and criminogenic need areas. Youth with high criminogenic needs may direct these skills toward antisocial pursuits (e.g., antisocial peers, manipulation). Indeed, research indicates that interpersonal relatedness skills may equip youth who possess criminal sophistication and/or psychopathic traits to establish connections with antisocial peers (e.g., Kerr, Van Zalk, & Stattin, 2012). It is important to see if these results are replicated in less high-risk samples.

There were no significant differences in time to recidivism across levels of the personal protective factor domain (i.e., RSCA Mastery). Perhaps a more nuanced view of mastery is needed when examining its relationship to recidivism. For instance, Walters (2016) found that low self-efficacy for living a non-criminal lifestyle was associated with continued criminality. General mastery abilities, as measured in this study, may be less relevant than considering context-specific traits (i.e., perceived ability to desist from criminality). If personal traits (i.e., self-esteem, optimism, adaptability) are high but the youth is not committed to a prosocial lifestyle, then these
traits may be directed towards antisocial pursuits. There also was no significant effect for the cognitive protective factor domain, although group separations were in the anticipated direction. Specifically, the High cognitive ability group had the longest time to recidivism relative to both the Moderate and Low cognitive ability groups. This trend is consistent with the expectation that youth with higher cognitive abilities would re-offend less quickly, in part because they are better able to inhibit impulsive decision-making. It is important to note that this analysis was conducted with a smaller subsample and, therefore, significant differences in time to recidivism between cognitive ability levels may have been detected with a larger sample size.

4.4 Moderating Influence of Demographic and Index Offence Characteristics

Research Question 5 assessed whether various demographic (i.e., age, gender, ethnicity) and index offence (i.e., type, severity) characteristics moderated the relationship between protective factor domains and markers of recidivism. It was hypothesized that the relationship between protective factors and recidivism would be stronger for female youth and for older adolescents. No specific hypotheses for ethnicity or index offence characteristics were proposed.

Results in the current study failed to find a moderating role for either gender or age on the relationships between protective factor domains and recidivism outcomes. However, these results must be interpreted in light of statistical limitations that emerged as a result of sample characteristics. As previously mentioned, the sample in the current study was representative of a high-risk, high-reoffending group of justice-involved youth. As such, the non-recidivist group was comprised of 23 individuals only, with males \( (n = 7) \) and young adolescents (i.e., age 13 or 14; \( n = 4 \)) grossly underrepresented.
As a result of the small sample sizes in the non-recidivist subgroups, these analyses likely resulted in the inflation of Type II error and, therefore, a lack of statistical power. Although the current analyses utilized bias-corrected bootstrap confidence intervals, which appear to demonstrate the highest level of statistical power among re-sampling statistical techniques, these intervals are still susceptible to inflations in Type II error when used in small sample sizes (Fritz & MacKinnon, 2007; Hayes, 2018). Moreover, regression-based procedures using small sample sizes result in problematic heteroscedasticity that persists beyond adjustments made by the heteroscedasticity-consistent covariance matrix estimator (which was employed as a correction via Process macro; Cai & Hayes, 2008; Hayes, 2013). Due to limited previous research on the moderating role of gender and age for relationships between protective factor domains and recidivism and the statistical limitations for these analyses in the current study, it is difficult to determine the exact influence that gender and age may have on these relationships.

It is possible that the null findings reflect the fact that the influence of the assessed protective factor domains is generally equivalent for male and female youth and adolescents of different ages, at least within high-risk samples. Gender and/or age may act as moderators for low- or moderate-risk youth who do not have substantial criminogenic needs. There was likely too little variability in risk and recidivism in the current sample to effectively identify true gender and age variations if they do exist. No previous studies have examined whether gender moderates the relationship between protective factors and recidivism, so it may be that the effect of these factors exerts itself in a similar way for male and female youth. However, for age, Hoge et al. (1996) found
that the effect of protective factors (i.e., positive peer relations, good school achievement, positive response to authority, effective use of leisure time) on recidivism was stronger among older (vs. younger) justice-involved youth. The inconsistency between these results and those of the current study may relate to some of the sample characteristics previously described. It may also be that it is not actually age that influences these relationships, but other variables that may often correlate with age, such as criminal history.

Given that no known research has examined the potential moderating role of ethnicity, index offence type, and index offence severity on the relationship between protective factors and recidivism outcomes, these analyses were conducted from an exploratory perspective. Results of the current study indicated that the effect of the protective factor domains (i.e., personal, social, emotional, cognitive) on recidivism (i.e., general recidivism, time to recidivism) did not vary as a function of ethnicity or index offence characteristics (i.e., type, severity). Due to the relatively small sample of non-recidivists across ethnic groups and, therefore, similar statistical violations as in the gender analysis, the lack of significant moderation was not surprising. Moreover, since index offences were primarily violent and of relatively high severity, restricted variability likely contributed to the lack of findings for index offence characteristics.

### 4.5 Incremental Predictive Validity of Protective Factors

Research Question 6 assessed whether the protective factor domains accounted for incremental variance in predicting recidivism (i.e., general recidivism and time to recidivism) above and beyond the effects of risk (i.e., YLS/CMI total score). It was hypothesized that the protective factor domains would account for incremental variance,
above and beyond the effects of risk, in both general recidivism and time to recidivism. These hypotheses were generally not supported, with the exception that the cognitive protective factor domain predicted general recidivism.

For general recidivism, the addition of the risk score (i.e., YLS/CMI total score) incrementally predicted general recidivism above and beyond the effects of gender. The addition of the protective factor domains did not contribute incrementally to the prediction of general recidivism. Thus, protective factors did not uniquely predict general recidivism once variance associated with gender and risk were taken into account. When examining individual protective factor domains, neither the personal, social, or emotional domain scores were significant incremental predictors of general recidivism. However, even with risk included in the model, cognitive ability remained a significant individual predictor of general recidivism, such that higher cognitive ability was associated with decreased odds of general recidivism. With cognitive ability excluded, results were consistent in that gender and risk score were both significant predictors of general recidivism, and the addition of the protective factor domains did not contribute incremental predictive ability to the model.

The results for time to general recidivism, controlled for time spent in custody, were similar to those found for general recidivism. Specifically, higher risk scores were associated with shorter time to recidivism and the protective factor domains did not incrementally predict time to recidivism over the effects of gender and risk. Consistent results were found in the full sample with the cognitive protective factor domain excluded. Supplemental analyses were also conducted to investigate the incremental prediction of violent recidivism. Risk for recidivism significantly predicted violent
recidivism over the effects of gender, but the protective factor domains did not account for incremental variance in violent recidivism either as a whole or individually. This pattern of results was the same when the analysis was repeated without cognitive ability included in the model.

Based on the results of the predictive validity analyses without risk included, it is clear that the protective factor domains were not strong predictors of recidivism on their own, with the exception of the cognitive protective factor domain. Thus, the lack of significant incremental findings for the personal, social, and emotional protective factor domains is not surprising. There has been inconsistency in previous research in regard to whether protective factors account for incremental validity in recidivism above and beyond risk. Furthermore, the studies that have examined this nuance have examined different protective factors than the current study. Schmidt et al. (2011) found that the SAVRY protective factor score no longer predicted recidivism after risk was included in the model. In contrast, Lodewijks et al. (2010) found that the SAVRY protective factor score predicted recidivism after accounting for the contribution of risk score.

The limited incremental validity findings may also be related to overlap between criminogenic needs and some of the protective factor domains. Specifically, several risk and protective factors exist at opposite ends of a continuum. For example, whereas emotion regulation abilities are considered to be protective, emotional reactivity (e.g., poor frustration tolerance, impulsivity) is part of the antisocial personality/behaviour criminogenic need (Bonta & Andrews, 2017) and is a risk factor for both general (e.g., Hoge & Andrews, 2002; Schmidt et al., 2011) and violent (e.g., Borum et al., 2002) recidivism. Similarly, as previously described, mastery and relatedness abilities can be
directed towards antisocial pursuits (e.g., manipulation of others, identification with a
criminal lifestyle) when significant criminogenic needs such as antisocial attitudes or
peers are present (Kerr et al., 2012, Walters, 2016). Support for associations between the
risk score and protective factor domains is provided by considering that risk (i.e.,
YLS/CMI total score) was significantly correlated with the personal, social, and
emotional protective factor domains (i.e., the RSCA scales), although these represented
small effects ($r = -0.17$ to $0.25$). In contrast, the cognitive protective factor domain was
not significantly associated with risk score. Thus, the variance in recidivism outcome
that cognitive ability accounts for appears to be relatively unique compared to that
accounted for by risk for recidivism, which likely explains why it demonstrated
incremental predictive validity.

4.6 The Moderating Role of Protective Factors on the Relationship Between Risk
and Recidivism

Multiple ways in which protective factors may be related to recidivism have
been discussed in the research literature. A direct effect has been proposed in which
protective factors act as significant independent predictors of recidivism. Although
research has been limited, there is some support for this position (e.g., Lodewijks et al.,
2010; Pearl et al., 2009; Rennie & Dolan, 2010). It also has been suggested that
protective factors may incrementally predict recidivism beyond the effects of risk for
recidivism, although mixed results have been found for this in previous studies
(Lodewijks et al., 2010; Schmidt et al., 2011). An alternative view is that protective
factors exert an indirect effect through moderation (e.g., Fougere & Daffern, 2011; Hoge
et al., 1996). It is also possible that protective factors have both direct and indirect relationships to recidivism.

In addition to assessing the direct effect of protective factors on recidivism, the potential indirect (i.e., moderating) effect was also examined (Research Question 7). It has been suggested that protective factors may exert their effects by mitigating the contribution of risk factors (e.g., Fougere & Daffern, 2011; Hoge et al., 1996). Thus, it was hypothesized that each protective factor domain would moderate the relationship between the youth’s risk score and markers of recidivism (i.e., general recidivism and time to recidivism), such that the protective factors would exert a stronger mitigating effect for youth higher in risk compared to those lower in risk. Multiple moderation analyses showed that none of the four protective factor domains significantly moderated the relationship between risk and general recidivism or time to recidivism.

Although a moderating role for protective factors has been proposed previously, support for this mitigating relationship has not yet been found in the few studies that have attempted to examine it. Moderation was specifically examined by Hoge et al. (1996), but no evidence that protective factors (i.e., positive peer relations, good school achievement, effective use of leisure time, positive response to authority) exerted a differential effect at varying risk levels was found. Although cognitive ability significantly predicted general recidivism in the current study, the contribution of risk to youth recidivism did not vary as a function of cognitive ability. However, the smaller sample size for the moderation analysis with cognitive ability may have limited the power to detect a significant moderating effect. It also may be that the strong and consistent relationship between level of risk and recidivism does not vary as a function
of a youth’s cognitive ability. Prior to concluding that the contribution of risk to recidivism does not vary as a function of cognitive ability, future research utilizing a larger sample with greater variability in both risk level and recidivism is needed.

In summary, results of the current dissertation provide very limited support for links between protective factors and youth recidivism. The protective factor domains as a whole predicted general recidivism but did not incrementally predict recidivism once risk was included. However, out of the four protective factor domains examined (i.e., personal, relational, emotional, cognitive), only cognitive ability was a significant predictor of general recidivism. No evidence for moderation was found for any of the protective factor domains in relation to either general recidivism or time to recidivism.

4.7 Implications for Risk Assessment and Rehabilitation

It is well-established that rehabilitation efforts adhering to the principles of the RNR model reduce future criminal behaviour (see Andrews & Bonta, 2010; Bonta & Andrews, 2017). Further, RNR-based rehabilitation is cost-effective in that it reduces future costs associated with criminal justice involvement (Romani et al., 2012). Thus, there are potentially significant economic benefits to providing effective risk management and intervention to youth involved in the Canadian criminal justice system. Evidence-based risk assessment practices are integral to developing individualized case management plans that adequately address criminogenic needs and specific responsivity factors (Andrews & Bonta, 2010). The results of the current dissertation highlight that the needs of youth referred for court-ordered assessment are often complex and diverse, and that intensive intervention addressing a variety of criminogenic need areas may be necessary to effectively reduce youth criminal behaviour.
Youth strengths or protective factors are captured by the RNR model within the Key Clinical Issues principles (Bonta & Andrews, 2017). However, there is limited guidance for clinicians conducting risk assessment or rehabilitative interventions as to how exactly protective factors should be included in risk conceptualizations and case plans (Hanson, 2009). The current state of the literature is that there is an emphasis on considering protective factors, but practitioners are left to determine how best to do this on their own, thereby increasing the likelihood that clinical decision making will be based on unstructured professional judgement. For risk assessment, the use of unstructured professional judgement is associated with increased evaluator biases, poor predictive validity, and poor reliability across time and raters (Hoge, 2002), and borders on unethical clinical practice (Bonta, 2002). In an effort to promote the use of structured clinical judgement, examining the nature of the relationship between specific protective factors and youth recidivism is of scientific and clinical importance.

Protective factors, at least in the way they were conceptualized and assessed in the current dissertation, did not add to the prediction of recidivism beyond risk/need information and they did not moderate the relationship between risk and recidivism. These findings, however, should not be taken to mean that protective factors bear no clinical utility for risk assessment and rehabilitative interventions. Specifically, the individual protective factor domains, with the exception of cognitive ability, can be conceptualized as specific responsivity (i.e., non-criminogenic) factors and, if present, could be utilized in case conceptualization and planning. If protective factors are not present or are present at low levels, these factors could potentially be enhanced within rehabilitative interventions, with the hopes of increasing a youth’s engagement in
correctional rehabilitation strategies and to improve his or her general functioning and well-being.

Shepherd et al. (2016) recently emphasized that, for youth who are at high risk to re-offend and have numerous criminogenic needs, the initial focus of intervention should be on reducing risk. Specifically, when multiple intervention targets (i.e., criminogenic needs) are identified, they should be prioritized based on how closely they are connected to the youth’s criminal behaviour and functioning (Shepherd et al., 2016). Thus, it is unlikely that protective factors would be prioritized if numerous criminogenic needs are present. To this end, it seems more likely that protective factors have the potential to figure more prominently for lower risk youth (and possibly first-time offenders) who possess fewer criminogenic needs, typically at a lower level. Moreover, although prioritizing treatment targets is important and often necessary with higher risk youth, this recommendation does not take into consideration the fact that multiple needs can be addressed simultaneously (Andrews & Bonta, 2010). For example, with respect to education, helping youth re-engage with educational programming can address multiple areas of risk including academic functioning, introducing structured prosocial activities, and simultaneously connecting the youth with prosocial peers while reducing contact with antisocial peers. Additionally, when areas of protection and risk overlap, a protective factor can be enhanced while also reducing risk.

In practice, predominant criminogenic need areas may need to be addressed before the youth can fully benefit from interventions aimed at enhancing protective factors (Shepherd et al., 2016). For example, efforts to increase youth self-efficacy may not have a desired protective effect if the youth is closely affiliated with an antisocial
peer group, has disengaged from school, and is not engaged in any prosocial activities. Thus, it appears that more nuanced relationships among the assessed protective factor domains and criminogenic need areas exist. These specific associations may help to illuminate how the effect of protective factors may differ as a result of risk factors that may be present. For example, it is possible that enhancing interpersonal relatedness skills among youth with high psychopathic and/or callous-unemotional traits may potentially contribute to enhanced criminal sophistication via interpersonal manipulation and associations with antisocial peers (Kerr et al., 2012). Considerations of these interactions may have significant clinical utility, both in regard to risk prediction and how best to intervene to reduce youth risk. As such, while assessing protective factors can have clinical utility, these factors may not be particularly helpful in predicting recidivism independently.

When considering the implications of the current study, it is important to consider the high-risk nature of the sample. In a group of youth with such significant criminogenic needs, it may be expected that the influence of these risk factors would outweigh or overshadow any potential impact that protective factor domains may exert. It may be that among high risk, serious youth offenders, such as the current sample, protective factors play a minimal role in risk appraisal, at least until criminogenic needs are addressed via effective rehabilitative intervention. Conversely, it is possible that protective factors may predict criminal behaviour in other subgroups of justice-involved youth, including first-time offenders, low- to moderate-risk youth, or youth that are at risk for engaging in criminal behaviour but have not yet become involved with the criminal justice system. In youth with less entrenched risk factors and/or who have not
developed a pattern of criminal activity, protective factors may have a stronger influence. Additionally, efforts to enhance these factors through case planning and intervention may be more meaningful in regard to risk reduction among these lower-risk subgroups of youth. Research focusing on specific subgroups of youth can help to clarify for which youth protective factors may be most relevant, allowing clinicians to best focus their efforts.

Consistent with previous research (e.g., Mowder et al., 2010; Rennie & Dolan, 2010), youth in the current sample had relatively low levels of the protective factor domains assessed. Therefore, it is important for professionals working with justice-involved youth to assess protective factors across social, family, and individual domains in order to capture both strengths and areas of deficit in all areas of a youth’s life. Further, it is important that these professionals remain cognizant that building upon any area of strength is likely to be meaningful in a group of youth who likely possess few protective factors, such as high-risk youth referred for court-ordered assessments. As highlighted by Rennie and Dolan (2010), the presence of any one protective factor, relative to an absence of protective factors, can meaningfully reduce youth re-offending. However, research contributing to our understanding of the potency of different individual protective factors on youths’ functioning is lacking.

The results of the current study also highlight the importance of considering how to assess protective factors, including the assessment methods utilized. Personal, social, and emotional domains of youth resiliency were assessed using the RSCA, which allowed for a dimensional (vs. dichotomous) measure of these traits. The dimensional assessment of these domains allowed for increased variability and the ability to assess
how these traits function at varying levels (i.e., low, moderate, high). However, the RSCA defines resiliency as youth traits or characteristics that enable him/her to achieve a positive outcome (Prince-Embury, 2007), which is not consistent with how resiliency is conceptualized in the broader literature. Specifically, resiliency is increasingly recognized as a process involving the interaction between the youth and his/her environment in coping with adversity and promoting positive outcome (e.g., Brownlee et al., 2013; Goldstein & Brooks, 2006). Thus, a focus on assessing specific traits does not fully capture this interaction or provide information on how these traits may (or may not be) promoting desistance from criminal behaviour.

Furthermore, the RSCA is a self-report measure and, therefore, represents the youth’s perception of these traits. Although a youth’s perspective on his/her abilities is important (Prince-Embury, 2007), it is possible that a youth’s ratings on the RSCA may differ from the ratings from other informants (e.g., parent/caregiver, clinician). Moreover, best practice guidelines for risk assessment underscore the importance of gathering information from multiple sources (e.g., Campbell et al., 2016). It is possible that clinician ratings, which are based on consideration of a broad array of information, may be more related to recidivism than a youth’s self-report. Indeed, previous research has found that protective factors predicted recidivism when they were operationalized based on clinician/researcher ratings (e.g., Hoge et al., 1996; Lodewijks et al., 2010; Schmidt et al., 2011). Interestingly, the one protective factor domain in the current study that was objectively measured, the cognitive domain, was a significant predictor of general recidivism. Thus, clinicians should consider how to best capture the factors that they intend to assess.
4.8 Study Strengths and Limitations

A major strength of the current dissertation is that the data reflect the actual clinical practice of a specialized youth forensic service that conducts court-ordered assessments in the province of Nova Scotia. The measures were all administered as part of comprehensive psychological and risk assessments and recidivism data were obtained from provincial criminal record data. Thus, the current study has good ecological validity. Research examining adherence to the principles of the RNR model in practice often finds a disconnect between theory and actual practice (Dyck et al., 2018; Peterson-Badali, Skilling, & Haqanee, 2015; Vieira et al., 2009; Vincent et al., 2012) and a recent systematic review concluded that professionals do not consistently adhere to the results of risk assessment tools or use them to guide case planning (Viljoen, Cochrane, & Jonnson, 2018). Although none of these studies focused on protective factors, it could be expected that these field adherence difficulties would also apply to protective factors. Thus, it is important to evaluate actual clinical practices to determine if what is being implemented is having the desired effect. The use of real-world data also allows the results to directly inform the clinical practices at the IWK Youth Forensic Services.

Additionally, the use of a relatively long follow-up period is a strength of the current study. Longer follow-up periods provide more time for youth to be in the community and engage in further criminal behaviour and allow for more opportunities for antisocial behaviour to come to the attention of authorities (Mulder et al., 2011). There is substantial variability in the length of follow-up periods for other research that has examined the predictive ability of protective factors (i.e., 6 months to 10 years; Schmidt et al., 2011; Shepherd et al., 2016); however, few of these studies had follow-
up periods as long as that in the current study. Thus, this research contributed to knowledge of predictive effects across a longer period of time. Despite these benefits, it is important to consider the impact that follow-up period length has on obtained results. Due to the greater opportunity for new offences to occur, higher recidivism rates are expected in studies with longer follow-up length. Additionally, very long follow-up periods may not be necessary for youth predictive validity studies, as those who re-offend tend to do so quickly. Mulder et al. (2011) found that the vast majority of youth recidivated within the first two years, and after five years, very few new youth re-offended.

Despite these important strengths, there are several limitations of the current dissertation that warrant discussion. First, although a total of 260 cases were included in the assessment database, not all of them met the inclusion criteria to be used as part of this research. Following deletion of cases that did not have a complete psychological report, were missing one or both of the primary study measures (i.e., YLS/CMI, RSCA), or lived out of province, the final sample consisted of 173 cases. The primary measures used in the current research were ones that were often utilized as part of the assessments conducted by the IWK Youth Forensic Services (YFS). However, given that the IWK YFS did not have a standardized battery for assessment during the period over which the included cases were assessed, it is not surprising that not all cases included the YLS/CMI and/or the RSCA. Similarly, cognitive ability assessment measures were not consistently administered to youth, resulting in only a subset of youth ($N = 83$) having a cognitive ability score available. Choice of measures for a specific assessment case likely depended on a variety of factors, including clinician preference, purpose of
assessment (e.g., pre- or post-conviction), and youth characteristics (e.g., cognitive ability, reading level, attention span). Recent efforts have been made within the service to be more consistent in assessment tools and procedures utilized across youth. However, due to the lengthy time frame over which coded assessments occurred, this recent change was not reflected in the current sample.

Another limitation is that the current sample likely differed from the general population of justice-involved youth in Nova Scotia. Specifically, youth in the current sample likely committed more serious index offences, had a longer criminal history, were of higher risk, and possessed fewer protective factors. However, it is impossible to verify these hypothesized group differences with the current data. In a sample of youth in custody facilities in Nova Scotia, the majority of youth had prior offences (86%), significant academic difficulties (55%), significant behaviour problems at school (72%), and a history of school expulsion (73%; Campbell et al., 2004). However, only 15% of these youth had convictions for violent offences (Campbell et al., 2004). Youth who were referred for assessment through YFS would have been selected for a specific reason. Thus, the current findings may not generalize to other provinces or countries, or to youth in Nova Scotia who did not receive court-ordered assessments. It is also likely that the overall justice-involved youth population in Nova Scotia would show greater variability on risk and protective factor domains, which may have allowed for additional effects to be detected.

The current study relied on a review of youth case files, which limited the assessment of the protective factor domains to the RSCA and measures of cognitive ability. As a result, additional information, such as specifically how the protective
factors of interest might reduce (or be unrelated to) a youth’s criminal behaviour, could not be obtained. Multiple informant perspectives on these protective factors were also not collected. Use of alternative methods to assess these domains, such as interviews with youth and parents, might have provided richer information regarding if and how these factors exert a protective effect for individual youth. This information would be helpful to individualize case planning and intervention. It would also help to clarify the exact nature of the association between protective factor domains and recidivism.

Another limitation of the current study relates to the use of the RSCA to measure three of the four protective factor domains assessed. The RSCA was not designed to assess protective factors for criminal behaviour or to be used with justice-involved youth. Although the RSCA has been found to have a consistent factor structure in an incarcerated male youth sample (Gibson & Clarbour, 2017) and was also used by Mowder et al. (2010) with justice-involved youth, neither of these studies evaluated the predictive validity of the RSCA. Thus, the current study was the first to use the RSCA to predict recidivism. Due to this, it is unclear if the lack of significant findings is related to characteristics of the sample, limitations of the RSCA at capturing individual protective factors relevant to future criminal behaviour, and/or because these domains are actually not associated with recidivism.

Additionally, although the three factors assessed by the RSCA (i.e., mastery, relatedness, emotion regulation) have all been proposed as protective factors for recidivism, previous research that has specifically assessed the predictive validity of these individual protective factors is minimal. Other individual protective factors that are likely relevant for recidivism (e.g., executive functioning, prosocial attitudes) are not
captured by the RSCA. Thus, although the use of the RSCA allowed for an in-depth assessment of three individual characteristics, this was at the expense of examining other areas that might be relevant. Consideration of a broader range of protective factors or different individual youth traits may have yielded a different pattern of results.

4.9 Future Research Directions

The results of the current study suggest several important avenues for future research. It will be important to examine associations between protective factors and recidivism in samples with greater variability in index offence characteristics (i.e., type and severity), risk, and level of protective factors, to better clarify the ways in which protective factors may be related to offending/re-offending. Such samples could include Youth Court participants in general rather than youth who are court-referred for assessment, first-time offenders, at-risk youth who have not yet engaged in criminal behaviour, or some combination of these samples could be compared. It may be that protective factors will emerge as more salient predictors of offending for first-time offenders than for those youth already involved in the criminal justice system.

Although the current study examined the prediction of general and violent recidivism and time to recidivism, additional outcomes that were not examined are the volume and severity of recidivism over the follow-up period. Both of these markers of recidivism represent a harm-reduction approach to mitigating negative outcomes, so they may be more sensitive to the effect of protective factors. These outcomes have not been examined previously in relation to individual protective factors. By using a relatively lengthy follow-up period and considering behaviour across the entire follow-up period, effects that may take longer to exert an effect may become more important
(and more likely to be detected) as youth mature (i.e., may assist youth in desisting as they enter adulthood).

The current study assessed four protective factor domains, but there are other individual protective factors that warrant investigation. For example, examining specific areas of cognitive functioning (e.g., verbal reasoning, nonverbal reasoning, working memory) can help clarify whether there are certain cognitive abilities that are stronger predictors of recidivism and if different cognitive abilities are associated with different forms of offending (i.e., general, reactive violence, instrumental violence). Similarly, good executive functioning abilities could be expected to assist youth with desisting from criminality (Fairchild et al., 2013; Hoge & Andrews, 2002; Martel et al., 2007).

Prosocial attitudes (i.e., not supportive of criminal lifestyle, positive attitude towards authority and intervention) have also been suggested as an individual protective factor and warrant further investigation (Borum et al., 2002; Hoge et al., 1996; Lodewijks et al., 2010).

Additionally, as previously discussed, there are likely nuanced relationships between protective factors and criminogenic needs, which warrant further investigation. For instance, the potential interaction between interpersonal relatedness skills and criminogenic need areas, such as antisocial attitudes, associations with procriminal peers, or psychopathic traits, should be further investigated to determine whether these interpersonal skills may serve as a risk (vs. protective) factor in a subpopulation of justice-involved youth (e.g., those with high psychopathic and/or callous-unemotional traits or more entrenched attitudes that support criminality). Similarly, mastery abilities (i.e., optimism, self-efficacy, adaptability) likely interact with these same criminogenic
needs to produce differential effects. As highlighted by Walters (2016), low self-esteem may act as a risk factor if the youth is not confident that they can succeed in efforts to desist from criminal behaviour, but high self-esteem may be a risk factor if the youth is committed to maintaining a criminal lifestyle. It is useful for studies to assess multiple protective factors in order to compare effects and to examine interactions between risk and protective factors. However, this should be balanced with efforts to assess selected protective factors in more depth rather than simply having a single item and/or using dichotomous ratings.

Future research could also focus on the development and validation of evidence-based tools to assess protective factors. Promising measures include the Structured Assessment of Protective Factors for Violence Risk – Youth Version (SAPROF-YV; de Vries Robbe, Geers, Stapel, Hilterman, & de Vogel, 2015) and the Short-Term Assessment of Risk and Treatability: Adolescent Version (START:AV; Viljoen, Nicholls, Cruise, Desmarais, & Webster, 2014). Both of these measures have been designed specifically for use with justice-involved youth samples and assess a broad array of factors that are relevant for these youth. Additional promising measures that have been validated with general youth populations include the Child and Youth Resilience Measure (Ungar & Liebenberg, 2011) and the Strengths Assessment Inventory (Beazeau, Teatro, Rawana, Brownlee, & Blanchette, 2011). However, at present, limited to no research is available on the predictive validity of any of these measures for recidivism. Thus, future research focused on the ability of these measures to predict various markers of recidivism in different subgroups of justice-involved youth (e.g., first-time offenders, community-supervised youth, court-referred youth) is
essential. Furthermore, due to the need to advise clinicians on how to integrate results of risk and protective factor tools, future research should examine incremental predictive validity and moderating effects of these protective factor tools related to empirically-supported risk tools (e.g., YLS/CMI, SAVRY).

4.11 Conclusions

The current dissertation examined the relationships between four individual protective factors and youth recidivism. Although protective factors should be assessed as part of balanced risk assessment practice, limited information is available regarding which factors are most closely associated with desistance from offending, how they should be assessed, and how these results should be incorporated into risk judgements. In this study, the role of protective factors as predictors of recidivism and as moderators of the relationship between risk and recidivism were examined. The results suggest that individual protective factors may not be directly related to youth recidivism and do not moderate the strong and consistent relationship between risk and recidivism. However, it is difficult to determine the degree to which the results of the current study may have been impacted by high-risk characteristics of the sample and/or the measure of multiple protective factors that was used. As a result, additional research is needed to clarify whether these individual protective factors may display stronger predictive effects in other samples of youth or if measured in alternative ways. In this study, the personal, social, and emotional protective factor domains were more consistent with specific responsivity factors than direct or indirect predictors of recidivism, and thus may have clinical utility for interventions. However, cognitive ability showed more promise as a direct protective factor, highlighting the importance of including measures of cognitive
functioning as part of risk assessment. This line of research has important implications for informing youth risk assessment practices and case planning for justice-involved youth.
<table>
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<tr>
<th>Domain</th>
<th>Risk Factors</th>
<th>Protective Factors</th>
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| Historical | History of Antisocial Behaviour  
- Previous engagement in criminal behaviour  
- Previous compliance difficulties | N/A |
| Social | Education  
- Poor quality relationships with teachers, school staff, and/or classmates  
- Low level of engagement with school  
- Behavioural difficulties in school setting  
- Poor achievement  
- Association with antisocial peers  
- Close relationships with peers involved in the criminal justice system, who use substances, and/or who display antisocial attitudes or behaviours  
- Few or no prosocial friends and/or acquaintances | Education  
- High achievement  
- High level of engagement with school  
- Strong commitment to school |
| Peers | Social Relationships  
- Perceived presence of social support from adults and/or prosocial peers  
- Strong attachment and bond to prosocial adult outside of family | Leisure/Recreation  
- Engagement in structured, prosocial activities  
- Productive use of free time |
| Leisure/Recreation |  
- Lack of involvement in structured, prosocial leisure activities  
- Lack of prosocial interests or hobbies  
- Poor use of free time | |
| Family | Family Relationships/Environment  
- Poor or conflictual relationships with parents  
- Violence or conflict in home  
- Parental antisocial activity | Family Relationships  
- Strong attachment and bond to an adult family member |
| Parenting Behaviours | Parenting Behaviours  
- Inappropriate monitoring and supervision of activities |  
- Appropriate monitoring and supervision of activities |
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<th>Domain</th>
<th>Risk Factors</th>
<th>Protective Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>Biological Predispositions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Decreased cortisol stress reactivity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Impairments in executive functioning, emotion recognition &amp; reactivity,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Fear conditioning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Antisocial Attitudes/Orientation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Presence of attitudes, values, beliefs, and rationalizations supportive of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Adoption of “criminal identity”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Lack of empathy for others</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Antisocial Personality/Behaviour</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Aggressive, callous, thrill seeking or disagreeable personality orientation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Lower self-control abilities (e.g., impulsivity, behavioural inhibition)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Substance Abuse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Problematic use of alcohol and/or drugs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Criminal behaviour associated with use of substances</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cognitive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Above Average cognitive abilities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Strong verbal skills</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Good executive functioning abilities (i.e., ability to inhibit behaviour)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Prosocial Attitudes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Social</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Ability to establish positive and meaningful relationships with others</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Ability to resolve interpersonal conflict</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emotional</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Emotional self-regulation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Ability to cope with stressors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Adaptability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Positive self-esteem and/or self-efficacy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Internal locus of control</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Described risk and protective factors compiled from the following sources: Bonta & Andrews, 2017; Born et al., 1997; Borum et al., 2002; Cottle et al., 2001; Efta-Breitbach & Freeman, 2004; Fairchild et al., 2013; Fougere et al., 2015; Hoge & Andrews, 2002; Hoge et al., 1996; Lodewijks et al., 2010; Mowder et al., 2010; Prince-Embrey, 2007; Simourd & Andrews, 1994; Schmidt et al., 2011.
### Table 2
**Demographics Characteristics of Sample**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Overall Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>((N = 173))</td>
</tr>
<tr>
<td>Age at Time of Assessment (Years) (M(SD))</td>
<td>15.56 (1.48)</td>
</tr>
<tr>
<td>Gender (%)</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>64.7</td>
</tr>
<tr>
<td>Females</td>
<td>35.3</td>
</tr>
<tr>
<td>Ethnicity (%)</td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>64.2</td>
</tr>
<tr>
<td>Black/African-Nova Scotian</td>
<td>11.0</td>
</tr>
<tr>
<td>Indigenous</td>
<td>10.4</td>
</tr>
<tr>
<td>Mixed Ethnicity/Other</td>
<td>4.6</td>
</tr>
<tr>
<td>Education Level (Grade) (M(SD))</td>
<td>8.42 (1.19)</td>
</tr>
<tr>
<td>Timing of Assessment (%)</td>
<td></td>
</tr>
<tr>
<td>Pre-Conviction</td>
<td>6.4</td>
</tr>
<tr>
<td>Post-Conviction</td>
<td>93.6</td>
</tr>
<tr>
<td>Purpose of Assessment (%)</td>
<td></td>
</tr>
<tr>
<td>Fitness/Criminal Responsibility</td>
<td>0.6</td>
</tr>
<tr>
<td>Bail/Pre-Release</td>
<td>3.5</td>
</tr>
<tr>
<td>Restorative</td>
<td>1.7</td>
</tr>
<tr>
<td>Consideration of Adult Sentence</td>
<td>4.0</td>
</tr>
<tr>
<td>General Sentencing</td>
<td>90.2</td>
</tr>
<tr>
<td>Index Offence Type(^+) (%)</td>
<td></td>
</tr>
<tr>
<td>Violent</td>
<td>61.3</td>
</tr>
<tr>
<td>Non-Violent</td>
<td>27.7</td>
</tr>
<tr>
<td>Technical</td>
<td>9.8</td>
</tr>
<tr>
<td>Index Offence Severity (M(SD))</td>
<td>18.70 (4.87)</td>
</tr>
<tr>
<td>Previous Convictions Prior to Index Offence (% Yes)</td>
<td>50.9</td>
</tr>
</tbody>
</table>

*Note. \(^+\)Reflects the type and severity of the most severe index offence.*
Table 3
*Participant Scores and Associated Descriptors on Assessment Measures*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean (SD) or %</th>
<th>Qualitative Descriptor</th>
<th>Internal Consistency (α)</th>
</tr>
</thead>
<tbody>
<tr>
<td>YLS/CMI Total Score $M(SD)$</td>
<td>22.86 (7.48)</td>
<td>High</td>
<td>.87</td>
</tr>
<tr>
<td>Criminal History Score</td>
<td>1.93 (1.59)</td>
<td>Moderate</td>
<td>.72</td>
</tr>
<tr>
<td>Family/Parenting Score</td>
<td>3.65 (1.62)</td>
<td>Moderate</td>
<td>.58</td>
</tr>
<tr>
<td>Education Score</td>
<td>3.37 (2.01)</td>
<td>Moderate</td>
<td>.72</td>
</tr>
<tr>
<td>Peers Score</td>
<td>2.89 (1.21)</td>
<td>Moderate</td>
<td>.64</td>
</tr>
<tr>
<td>Substance Abuse Score</td>
<td>2.71 (1.70)</td>
<td>High</td>
<td>.79</td>
</tr>
<tr>
<td>Leisure/Recreation Score</td>
<td>1.99 (.77)</td>
<td>High</td>
<td>.53</td>
</tr>
<tr>
<td>Personality/Behaviour Score</td>
<td>3.79 (1.73)</td>
<td>Moderate</td>
<td>.60</td>
</tr>
<tr>
<td>Attitudes/Orientation Score</td>
<td>2.57 (1.45)</td>
<td>Moderate</td>
<td>.60</td>
</tr>
<tr>
<td>YLS/CMI Risk Level (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>5.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>33.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>58.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very High</td>
<td>2.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RSCA Mastery T-score $M(SD)$</td>
<td>42.72 (9.44)</td>
<td>Below Average</td>
<td>.90</td>
</tr>
<tr>
<td>Optimism Scaled Score</td>
<td>8.01 (2.72)</td>
<td>Average</td>
<td>.80</td>
</tr>
<tr>
<td>Self-Efficacy Scaled Score</td>
<td>7.86 (2.75)</td>
<td>Average</td>
<td>.84</td>
</tr>
<tr>
<td>Adaptability Scaled Score</td>
<td>8.54 (3.09)</td>
<td>Average</td>
<td>.76</td>
</tr>
<tr>
<td>RSCA Relatedness T-score $M(SD)$</td>
<td>44.34 (10.53)</td>
<td>Below Average</td>
<td>.92</td>
</tr>
<tr>
<td>Trust Scaled Score</td>
<td>7.98 (2.89)</td>
<td>Average</td>
<td>.85</td>
</tr>
<tr>
<td>Support Scaled Score</td>
<td>8.58 (3.09)</td>
<td>Average</td>
<td>.76</td>
</tr>
<tr>
<td>Comfort Scaled Score</td>
<td>8.44 (2.81)</td>
<td>Average</td>
<td>.80</td>
</tr>
<tr>
<td>Tolerance Scaled Score</td>
<td>8.49 (2.97)</td>
<td>Average</td>
<td>.79</td>
</tr>
<tr>
<td>RSCA Reactivity T-score $M(SD)$</td>
<td>58.39 (11.05)</td>
<td>Above Average</td>
<td>.93</td>
</tr>
<tr>
<td>Sensitivity Scaled Score</td>
<td>11.62 (3.03)</td>
<td>Average</td>
<td>.82</td>
</tr>
<tr>
<td>Recovery Scaled Score</td>
<td>11.03 (3.47)</td>
<td>Average</td>
<td>.83</td>
</tr>
<tr>
<td>Impairment Scaled Score</td>
<td>12.95 (3.01)</td>
<td>Above Average</td>
<td>.89</td>
</tr>
<tr>
<td>Measure</td>
<td>Mean (SD) or %</td>
<td>Qualitative Descriptor</td>
<td>Internal Consistency (α)</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>----------------</td>
<td>------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Cognitive Functioning IQ Score M(SD)</td>
<td>89.61 (11.72)</td>
<td>Average</td>
<td></td>
</tr>
<tr>
<td>Cognitive Functioning Descriptor (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impaired/Extremely Low (&lt;70)</td>
<td>2.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Borderline (70-79)</td>
<td>12.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Average (80-89)</td>
<td>42.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average (90-110)</td>
<td>37.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Average (111-120)</td>
<td>6.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superior (121-129)</td>
<td>0.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Superior (≥ 130)</td>
<td>0.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Achievement Reading Score M(SD)</td>
<td>89.41 (15.88)</td>
<td>Low Average</td>
<td></td>
</tr>
<tr>
<td>Academic Achievement Descriptor (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impaired/Extremely Low (&lt; 70)</td>
<td>6.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Borderline (70-79)</td>
<td>12.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Average (80-89)</td>
<td>32.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average (90-110)</td>
<td>43.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Average (111-120)</td>
<td>1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superior (121-129)</td>
<td>0.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Superior (≥ 130)</td>
<td>3.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. N = 173 for YLS/CMI and RSCA; N = 83 for Cognitive Functioning; N = 64 for Academic Achievement, YLS/CMI = Youth Level of Service/Case Management Inventory; RSCA = Resiliency Scales for Children and Adolescents.*
Table 4
Comparison of Participants With Cognitive Functioning Measures to Those Without.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Cognitive Functioning Measure Administered (N = 83)</th>
<th>No Cognitive Functioning Measure (N = 90)</th>
<th>Group Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age $M(SD)$</td>
<td>15.58 (1.55)</td>
<td>15.54 (1.42)</td>
<td>$t(171) = .15, p = .88$</td>
</tr>
<tr>
<td>Gender (%)</td>
<td></td>
<td></td>
<td>$X^2(1) = 3.34, p = .07$</td>
</tr>
<tr>
<td>Males</td>
<td>57.8</td>
<td>71.1</td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>42.2</td>
<td>28.9</td>
<td></td>
</tr>
<tr>
<td>Ethnicity (%)</td>
<td></td>
<td></td>
<td>$X^2(3) = 4.03, p = .26$</td>
</tr>
<tr>
<td>Caucasian</td>
<td>68.7</td>
<td>60.0</td>
<td></td>
</tr>
<tr>
<td>Black/African-Nov Scotiaian</td>
<td>10.8</td>
<td>11.1</td>
<td></td>
</tr>
<tr>
<td>Indigenous</td>
<td>14.5</td>
<td>6.7</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>2.4</td>
<td>6.7</td>
<td></td>
</tr>
<tr>
<td>Education Level $M(SD)$</td>
<td>8.45 (1.33)</td>
<td>8.40 (1.05)</td>
<td>$t(156) = .29, p = .77$</td>
</tr>
<tr>
<td>Index Offence Type + (%)</td>
<td></td>
<td></td>
<td>$X^2(2) = 2.15, p = .34$</td>
</tr>
<tr>
<td>Violent</td>
<td>66.3</td>
<td>56.7</td>
<td></td>
</tr>
<tr>
<td>Non-Violent</td>
<td>22.9</td>
<td>32.2</td>
<td></td>
</tr>
<tr>
<td>Technical</td>
<td>10.8</td>
<td>8.9</td>
<td></td>
</tr>
<tr>
<td>Index Offence Severity $M(SD)$</td>
<td>18.87 (5.36)</td>
<td>18.53 (4.39)</td>
<td>$t(158.71) = .44, p = .66$</td>
</tr>
<tr>
<td>Prior Convictions (% Yes)</td>
<td>49.4</td>
<td>52.2</td>
<td>$X^2(1) = .28, p = .60$</td>
</tr>
<tr>
<td>YLS/CMI Total Score $M(SD)$</td>
<td>24.28 (6.32)</td>
<td>21.56 (8.24)</td>
<td>$t(165.65) = 2.42, p = .02$</td>
</tr>
<tr>
<td>Criminal History Score</td>
<td>1.98 (1.49)</td>
<td>1.89 (1.69)</td>
<td>$t(171) = .36, p = .72$</td>
</tr>
<tr>
<td>Family/Parenting Score</td>
<td>3.90 (1.49)</td>
<td>3.41 (1.72)</td>
<td>$t(171) = 2.01, p = .05$</td>
</tr>
<tr>
<td>Education Score</td>
<td>3.70 (1.86)</td>
<td>3.07 (2.10)</td>
<td>$t(170) = 2.07, p = .04$</td>
</tr>
<tr>
<td>Peers Score</td>
<td>3.13 (1.14)</td>
<td>2.67 (1.25)</td>
<td>$t(171) = 2.57, p = .011$</td>
</tr>
<tr>
<td>Substance Abuse Score</td>
<td>2.98 (1.66)</td>
<td>2.46 (1.71)</td>
<td>$t(171) = 2.03, p = .04$</td>
</tr>
<tr>
<td>Leisure/Recreation Score</td>
<td>2.13 (.64)</td>
<td>1.87 (.86)</td>
<td>$t(171) = 2.29, p = .02$</td>
</tr>
<tr>
<td>Characteristic</td>
<td>Cognitive Functioning Measure Administered (N = 83)</td>
<td>No Cognitive Functioning Measure (N = 90)</td>
<td>Group Differences</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>----------------------------------------------------</td>
<td>-------------------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Personality/Behaviour Score</td>
<td>3.90 (1.78)</td>
<td>3.69 (1.69)</td>
<td>$t(171) = .81, p = .42$</td>
</tr>
<tr>
<td>Attitudes/Orientation Score</td>
<td>2.66 (1.35)</td>
<td>2.48 (1.55)</td>
<td>$t(171) = .84, p = .40$</td>
</tr>
<tr>
<td>YLS/CMI Risk Level (%)</td>
<td></td>
<td></td>
<td>$X^2(3) = 11.57, p = .009$</td>
</tr>
<tr>
<td>Low</td>
<td>2.4</td>
<td>7.8</td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>24.1</td>
<td>42.2</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>68.7</td>
<td>48.9</td>
<td></td>
</tr>
<tr>
<td>Very High</td>
<td>4.8</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td>RSCA Mastery T-score $M(SD)$</td>
<td>42.81 (9.51)</td>
<td>42.86 (9.53)</td>
<td>$t(171) = -.19, p = .85$</td>
</tr>
<tr>
<td>Optimism Scaled Score</td>
<td>7.98 (2.59)</td>
<td>8.04 (2.84)</td>
<td>$t(171) = -.17, p = .87$</td>
</tr>
<tr>
<td>Self-Efficacy Scaled Score</td>
<td>7.78 (2.79)</td>
<td>7.92 (2.72)</td>
<td>$t(171) = -.33, p = .74$</td>
</tr>
<tr>
<td>Adaptability Scaled Score</td>
<td>8.72 (3.04)</td>
<td>8.37 (3.15)</td>
<td>$t(171) = .76, p = .45$</td>
</tr>
<tr>
<td>RSCA Relatedness T-score $M(SD)$</td>
<td>44.41 (10.76)</td>
<td>44.49 (10.76)</td>
<td>$t(171) = -.20, p = .84$</td>
</tr>
<tr>
<td>Trust Scaled Score</td>
<td>7.87 (2.85)</td>
<td>8.09 (2.94)</td>
<td>$t(171) = -.50, p = .62$</td>
</tr>
<tr>
<td>Support Scaled Score</td>
<td>8.47 (3.09)</td>
<td>8.69 (3.11)</td>
<td>$t(171) = -.46, p = .64$</td>
</tr>
<tr>
<td>Comfort Scaled Score</td>
<td>8.16 (2.77)</td>
<td>8.70 (2.83)</td>
<td>$t(171) = -1.26, p = .20$</td>
</tr>
<tr>
<td>Tolerance Scaled Score</td>
<td>8.31 (2.81)</td>
<td>8.66 (3.13)</td>
<td>$t(171) = -.76, p = .45$</td>
</tr>
<tr>
<td>RSCA Reactivity T-score $M(SD)$</td>
<td>58.53 (11.09)</td>
<td>56.97 (11.32)</td>
<td>$t(171) = 1.78, p = .08$</td>
</tr>
<tr>
<td>Sensitivity Scaled Score</td>
<td>12.06 (2.95)</td>
<td>11.22 (3.06)</td>
<td>$t(171) = 1.83, p = .07$</td>
</tr>
<tr>
<td>Recovery Scaled Score</td>
<td>11.12 (3.17)</td>
<td>10.94 (3.74)</td>
<td>$t(171) = .33, p = .74$</td>
</tr>
<tr>
<td>Impairment Scaled Score</td>
<td>13.54 (2.78)</td>
<td>12.41 (3.13)</td>
<td>$t(171) = 2.51, p = .04$</td>
</tr>
<tr>
<td>Recidivism – New Charges (% Yes)</td>
<td>86.7</td>
<td>86.7</td>
<td>$X^2(1) = 0.00, p = .99$</td>
</tr>
<tr>
<td>Time to First Recidivism Event – Adjusted for Time in Custody (days)</td>
<td>350.99 (552.86)</td>
<td>596.26 (922.84)</td>
<td>$t(147.51) = -2.14, p = .03$</td>
</tr>
<tr>
<td>Characteristic</td>
<td>Cognitive Functioning Measure Administered ($N = 83$)</td>
<td>No Cognitive Functioning Measure ($N = 90$)</td>
<td>Group Differences</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------------------------------------------</td>
<td>----------------------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Recidivism Offence Severity $M(SD)$</td>
<td>19.99 (5.09)</td>
<td>20.73 (4.47)</td>
<td>$t(171) = -.95, p = .34$</td>
</tr>
</tbody>
</table>

*Note.* RSCA = Resiliency Scales for Children and Adolescents. YLS/CMI = Youth Level of Service/Case Management Inventory.
Table 5
Recidivism Characteristics of Subsample of Recidivists

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean (SD) or %</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recidivism Offences</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Violent Charges (% Yes)</td>
<td>68.8</td>
<td></td>
</tr>
<tr>
<td>Number of Non-Violent Charges M(SD)</td>
<td>9.97 (15.49)</td>
<td>0 - 80</td>
</tr>
<tr>
<td>Violent Charges (% Yes)</td>
<td>65.3</td>
<td></td>
</tr>
<tr>
<td>Number of Violent Charges M(SD)</td>
<td>7.67 (11.54)</td>
<td>0 - 66</td>
</tr>
<tr>
<td>Sexual Charges (% Yes)</td>
<td>5.8</td>
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</tr>
<tr>
<td>Number of Sexual Charges</td>
<td>0.22 (1.47)</td>
<td>0 - 17</td>
</tr>
<tr>
<td>Drug Charges (% Yes)</td>
<td>28.3</td>
<td></td>
</tr>
<tr>
<td>Number of Drug Charges M(SD)</td>
<td>0.95 (2.29)</td>
<td>0 - 17</td>
</tr>
<tr>
<td>Technical Charges (% Yes)</td>
<td>80.3</td>
<td></td>
</tr>
<tr>
<td>Number of Technical Charges M(SD)</td>
<td>22.21 (26.87)</td>
<td>0 - 155</td>
</tr>
<tr>
<td><strong>Total Number of Recidivism Events Over</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow-Up Period M(SD)</td>
<td>12.92 (12.42)</td>
<td>1 - 61</td>
</tr>
<tr>
<td>Recidivism Offence Severity M(SD)</td>
<td>20.37 (4.78)</td>
<td>7 - 25</td>
</tr>
<tr>
<td><strong>Time to First Recidivism Event (Days) M(SD) – Not Adjusted</strong></td>
<td>286.86 (400.07)</td>
<td>2 - 2044</td>
</tr>
<tr>
<td>Custody Time During Follow-Up Period (Days) M(SD)</td>
<td>400.25</td>
<td>0 - 2848</td>
</tr>
<tr>
<td><strong>Time to First Recidivism Event (Days) M(SD) – Adjusted for Time in Custody</strong></td>
<td>250.38 (343.86)</td>
<td>0 - 1597</td>
</tr>
<tr>
<td>Age at Time of First Recidivism Event (Years) M(SD)</td>
<td>16.32 (2.02)</td>
<td>13 - 23</td>
</tr>
</tbody>
</table>

*Note. N = 150.*
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Recidivists(^+) ((N = 150))</th>
<th>Non-Recidivists(^+) ((N = 23))</th>
<th>Group Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (M(SD))</td>
<td>15.55 (1.50)</td>
<td>15.65 (1.30)</td>
<td>(t(171) = -0.32, p = .75)</td>
</tr>
<tr>
<td>Gender (%)*</td>
<td></td>
<td></td>
<td>(X^2(1) = 13.68, p &lt; .001)</td>
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<tr>
<td>Males</td>
<td>70.0</td>
<td>30.4</td>
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<tr>
<td>Females</td>
<td>30.0</td>
<td>69.6</td>
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</tr>
<tr>
<td>Ethnicity (%)</td>
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<td></td>
<td>(X^2(3) = 3.29, p = .35)</td>
</tr>
<tr>
<td>Caucasian</td>
<td>63.3</td>
<td>69.6</td>
<td></td>
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<tr>
<td>Black/African-Nova Scotian</td>
<td>12.7</td>
<td>0.0</td>
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</tr>
<tr>
<td>Indigenous</td>
<td>10.0</td>
<td>13.0</td>
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</tr>
<tr>
<td>Other</td>
<td>4.7</td>
<td>4.3</td>
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<tr>
<td>Education Level (M(SD))</td>
<td>8.37 (1.22)</td>
<td>8.76 (.89)</td>
<td>(t(156) = -1.41, p = .16)</td>
</tr>
<tr>
<td>Index Offence Type(^+) (%)</td>
<td></td>
<td></td>
<td>(X^2(2) = 1.61, p = .45)</td>
</tr>
<tr>
<td>Violent</td>
<td>62.7</td>
<td>52.2</td>
<td></td>
</tr>
<tr>
<td>Non-Violent</td>
<td>26.0</td>
<td>39.1</td>
<td></td>
</tr>
<tr>
<td>Technical</td>
<td>10.0</td>
<td>8.7</td>
<td></td>
</tr>
<tr>
<td>Index Offence Severity (M(SD))</td>
<td>18.63 (4.95)</td>
<td>19.13 (4.39)</td>
<td>(t(169) = -0.46, p = .65)</td>
</tr>
<tr>
<td>Prior Convictions (% Yes)</td>
<td>56.7</td>
<td>13.0</td>
<td>(X^2(1) = 15.70, p &lt; .001)</td>
</tr>
<tr>
<td>YLS/CMI Total Score (M(SD))</td>
<td>24.03 (6.43)</td>
<td>15.26 (9.38)</td>
<td>(t(25.27) = 4.33, p &lt; .001)</td>
</tr>
<tr>
<td>Criminal History Score</td>
<td>2.11 (1.59)</td>
<td>0.78 (1.13)</td>
<td>(t(171) = 3.86, p &lt; .001)</td>
</tr>
<tr>
<td>Family/Parenting Score</td>
<td>3.79 (1.54)</td>
<td>2.74 (1.86)</td>
<td>(t(171) = 2.94, p = .004)</td>
</tr>
<tr>
<td>Education Score</td>
<td>3.52 (2.03)</td>
<td>2.39 (1.59)</td>
<td>(t(170) = 2.54, p = .012)</td>
</tr>
<tr>
<td>Peers Score</td>
<td>3.05 (1.07)</td>
<td>1.83 (1.53)</td>
<td>(t(25.44) = 3.72, p = .001)</td>
</tr>
<tr>
<td>Substance Abuse Score</td>
<td>2.90 (1.65)</td>
<td>1.43 (1.47)</td>
<td>(t(171) = 4.01, p &lt; .001)</td>
</tr>
<tr>
<td>Leisure/Recreation Score</td>
<td>2.06 (.69)</td>
<td>1.57 (1.12)</td>
<td>(t(24.60) = 2.06, p = .05)</td>
</tr>
<tr>
<td>Characteristic</td>
<td>Recidivists$^+$ $(N = 150)$</td>
<td>Non-Recidivists$^+$ $(N = 23)$</td>
<td>Group Differences</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-----------------------------</td>
<td>--------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Personality/Behaviour Score</td>
<td>3.94 (1.64)</td>
<td>2.83 (2.02)</td>
<td>$t(171) = 2.93$, $p = .004$</td>
</tr>
<tr>
<td>Attitudes/Orientation Score</td>
<td>2.71 (1.38)</td>
<td>1.65 (1.58)</td>
<td>$t(171) = 3.34$, $p = .001$</td>
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<tr>
<td>YLS/CMI Risk Level (%) Low</td>
<td>2.0</td>
<td>26.1</td>
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<td></td>
<td>31.3</td>
<td>47.8</td>
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</tr>
<tr>
<td></td>
<td>63.3</td>
<td>26.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.3</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>RSCA Mastery T-score $M(SD)$</td>
<td>42.81 (9.51)</td>
<td>42.13 (9.15)</td>
<td>$t(171) = .32$, $p = .75$</td>
</tr>
<tr>
<td>Optimism Scaled Score</td>
<td>7.98 (2.71)</td>
<td>8.22 (2.81)</td>
<td>$t(171) = -.39$, $p = .70$</td>
</tr>
<tr>
<td>Self-Efficacy Scaled Score</td>
<td>7.93 (2.76)</td>
<td>7.39 (2.68)</td>
<td>$t(171) = .87$, $p = .39$</td>
</tr>
<tr>
<td>Adapability Scaled Score</td>
<td>8.60 (3.11)</td>
<td>8.13 (3.01)</td>
<td>$t(171) = .68$, $p = .50$</td>
</tr>
<tr>
<td>RSCA Relatedness T-score $M(SD)$</td>
<td>44.41 (10.76)</td>
<td>43.83 (9.04)</td>
<td>$t(171) = .25$, $p = .80$</td>
</tr>
<tr>
<td>Trust Scaled Score</td>
<td>8.05 (2.94)</td>
<td>7.57 (2.54)</td>
<td>$t(171) = .74$, $p = .46$</td>
</tr>
<tr>
<td>Support Scaled Score</td>
<td>8.60 (3.19)</td>
<td>8.48 (2.43)</td>
<td>$t(171) = .18$, $p = .86$</td>
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<tr>
<td>Comfort Scaled Score</td>
<td>8.58 (2.86)</td>
<td>7.52 (2.23)</td>
<td>$t(171) = 1.69$, $p = .09$</td>
</tr>
<tr>
<td>Tolerance Scaled Score</td>
<td>8.49 (3.10)</td>
<td>8.52 (2.00)</td>
<td>$t(171) = -.05$, $p = .96$</td>
</tr>
<tr>
<td>RSCA Reactivity T-score $M(SD)$</td>
<td>58.53 (11.09)</td>
<td>57.48 (11.03)</td>
<td>$t(171) = .43$, $p = .67$</td>
</tr>
<tr>
<td>Sensitivity Scaled Score</td>
<td>11.69 (3.00)</td>
<td>11.17 (3.24)</td>
<td>$t(171) = .77$, $p = .45$</td>
</tr>
<tr>
<td>Recovery Scaled Score</td>
<td>11.07 (3.41)</td>
<td>10.78 (3.91)</td>
<td>$t(171) = .36$, $p = .72$</td>
</tr>
<tr>
<td>Impairment Scaled Score</td>
<td>13.05 (2.92)</td>
<td>12.30 (3.55)</td>
<td>$t(171) = 1.11$, $p = .27$</td>
</tr>
<tr>
<td>Cognitive Ability Standardized Score</td>
<td>88.42 (11.35)</td>
<td>97.45 (11.56)</td>
<td>$t(81) = -2.45$, $p = .016$</td>
</tr>
<tr>
<td>Cognitive Ability Descriptor (%)$^*$</td>
<td></td>
<td></td>
<td>$X^2(4) = 5.27$, $p = .26$</td>
</tr>
<tr>
<td>Characteristic</td>
<td>Recidivists⁺</td>
<td>Non-Recidivists⁺</td>
<td>Group Differences</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>---------------</td>
<td>------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td></td>
<td>((N = 150))</td>
<td>((N = 23))</td>
<td></td>
</tr>
<tr>
<td>Impaired/Extremely Low (&lt; 70)</td>
<td>1.3</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Borderline (70-79)</td>
<td>6.7</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Low Average (80-89)</td>
<td>20.7</td>
<td>17.4</td>
<td></td>
</tr>
<tr>
<td>Average (90-110)</td>
<td>17.3</td>
<td>21.7</td>
<td></td>
</tr>
<tr>
<td>High Average (111-120)</td>
<td>2.0</td>
<td>8.7</td>
<td></td>
</tr>
<tr>
<td>Academic Achievement Reading Score (M(\sigma))⁺</td>
<td>88.71 (15.46)</td>
<td>93.67 (18.64)</td>
<td>(t(62) = -0.87, p = 0.39)</td>
</tr>
<tr>
<td>Total Length of Follow-up Period – Adjusted for Time in Custody (days)</td>
<td>2273.93 (861.21)</td>
<td>1109.51 (231.35)</td>
<td>(t(171) = 1.53, p = 0.13)</td>
</tr>
</tbody>
</table>

*Note. The sample size for the comparisons for the cognitive ability and academic achievement variables differ from these values. Cognitive ability: \(N = 83\) (72 recidivists, 11 non-recidivists). Academic achievement: \(N = 64\) (55 recidivists, 9 non-recidivists). RSCA = Resiliency Scales for Children and Adolescents. YLS/CMI = Youth Level of Service/Case Management Inventory.*
Table 7
Hierarchical Logistic Regression Predicting General Recidivism

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Nagelkerke’s $R^2$</th>
<th>$b$</th>
<th>SE</th>
<th>$\chi^2$</th>
<th>Wald’s $\chi^2$</th>
<th>df</th>
<th>$p$</th>
<th>$e^b$ [95% CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>With Cognitive Ability</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 1</strong></td>
<td>.18</td>
<td><strong>8.40</strong></td>
<td>1</td>
<td><strong>6.41</strong></td>
<td><strong>1</strong></td>
<td>.004</td>
<td>7.96 [1.60, 39.67]</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>2.08</td>
<td>.82</td>
<td>6.41</td>
<td>1</td>
<td>.011</td>
<td>7.96 [1.60, 39.67]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td>.36</td>
<td><strong>9.84</strong></td>
<td>4</td>
<td><strong>1</strong></td>
<td><strong>.043</strong></td>
<td>.043</td>
<td>1.04 [95, 1.15]</td>
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</tr>
<tr>
<td>RSCA Mastery$^+$</td>
<td>-.01</td>
<td>.05</td>
<td>.01</td>
<td>1</td>
<td>.923</td>
<td>.923</td>
<td>1.00 [90, 1.11]</td>
<td></td>
</tr>
<tr>
<td>RSCA Relatedness$^+$</td>
<td>.04</td>
<td>.05</td>
<td>.71</td>
<td>1</td>
<td>.40</td>
<td>.40</td>
<td>1.04 [95, 1.15]</td>
<td></td>
</tr>
<tr>
<td>RSCA Reactivity$^+$</td>
<td>.01</td>
<td>.04</td>
<td>.08</td>
<td>1</td>
<td>.78</td>
<td>.78</td>
<td>1.01 [94, 1.09]</td>
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<tr>
<td>Cognitive Ability$^*$</td>
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<td>7.27</td>
<td>1</td>
<td>.007</td>
<td>.007</td>
<td>.89 [82, 97]</td>
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</tr>
<tr>
<td><strong>Without Cognitive Ability</strong></td>
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</tr>
<tr>
<td><strong>Step 1</strong></td>
<td>.13</td>
<td><strong>13.04</strong></td>
<td>1</td>
<td><strong>11.82</strong></td>
<td><strong>1</strong></td>
<td>.011</td>
<td>5.33 [2.05, 13.85]</td>
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</tr>
<tr>
<td>Gender</td>
<td>1.67</td>
<td>.49</td>
<td>11.82</td>
<td>1</td>
<td>.011</td>
<td>.011</td>
<td>5.33 [2.05, 13.85]</td>
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<tr>
<td><strong>Step 2</strong></td>
<td>.14</td>
<td><strong>.91</strong></td>
<td>3</td>
<td><strong>.50</strong></td>
<td><strong>1</strong></td>
<td>.824</td>
<td>.97 [94, 1.06]</td>
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<tr>
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<td>.962</td>
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<td>.05</td>
<td>1</td>
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<td>.832</td>
<td>.99 [94, 1.05]</td>
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<td>.02</td>
<td>.50</td>
<td>1</td>
<td>.481</td>
<td>.481</td>
<td>.97 [94, 1.06]</td>
<td></td>
</tr>
</tbody>
</table>

Note: $N = 83$. RSCA = Resiliency Scales for Children and Adolescents. $^+$Represents total T-score. $^*$Represents standardized score.
Table 8
Hierarchical Logistic Regression Predicting Violent Recidivism

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Nagelkerke’s $R^2$</th>
<th>$b$</th>
<th>SE</th>
<th>$\chi^2$</th>
<th>Wald’s $\chi^2$</th>
<th>df</th>
<th>p</th>
<th>$e^b$</th>
<th>[95% CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>With Cognitive Ability</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 1</strong></td>
<td>.18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.001</td>
<td>5.07</td>
<td>[1.93, 13.31]</td>
</tr>
<tr>
<td>Gender</td>
<td>1.62</td>
<td>.49</td>
<td></td>
<td>10.84</td>
<td>1</td>
<td></td>
<td>.001</td>
<td>5.07</td>
<td>[1.93, 13.31]</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
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<td>RSCA Mastery</td>
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<td></td>
<td>.005</td>
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<td></td>
<td>.945</td>
<td>1.00</td>
<td>[.93, 1.08]</td>
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<td>.609</td>
<td>.98</td>
<td>[.92, 1.05]</td>
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<td>.03</td>
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<td>.05</td>
<td>1</td>
<td></td>
<td>.820</td>
<td>1.01</td>
<td>[.96, 1.06]</td>
</tr>
<tr>
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<td>.02</td>
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<td>.53</td>
<td>1</td>
<td></td>
<td>.465</td>
<td>.98</td>
<td>[.94, 1.03]</td>
</tr>
<tr>
<td><strong>Without Cognitive Ability</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Step 1</strong></td>
<td>.13</td>
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<td>&lt;.001</td>
<td>3.96</td>
<td>[2.04, 7.71]</td>
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<tr>
<td>Gender</td>
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<td>16.46</td>
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Table 9
Hierarchical Logistic Regression Predicting General Recidivism with Risk Score Controlled

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Note: $N = 83$. YLS/CMI = Youth Level of Service/Case Management Inventory; RSCA = Resiliency Scales for Children and Adolescents. $^+$Represents total $T$-score. $^*$Represents standardized score.
Table 10
Hierarchical Logistic Regression Predicting Violent Recidivism with Risk Score Controlled

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*Note: $N = 83$. YLS/CMI = Youth Level of Service/Case Management Inventory; RSCA = Resiliency Scales for Children and Adolescents. ‘Represents total $T$-score. *Represents standardized score.
Table 11
Hierarchical Cox Regression Predicting Time to Recidivism with Risk Score Controlled

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*Note: N = 83. YLS/CMI = Youth Level of Service/Case Management Inventory; RSCA = Resiliency Scales for Children and Adolescents. *Represents total $T$-score. *Represents standardized score.
Figure 1. Kaplan-Meier survival curve comparing the time to first recidivism event by Low, Moderate, and High RSCA Mastery groups (N = 173).
Figure 2. Kaplan-Meier survival curve comparing the time to first recidivism event by Low, Moderate, and High RSCA Relatedness groups (N = 173).
Figure 3. Kaplan-Meier survival curve comparing the time to first recidivism event by Low, Moderate, and High RSCA Reactivity groups (N = 173).
Figure 4. Kaplan-Meier survival curve comparing the time to first recidivism event by Low, Moderate, and High cognitive ability groups ($N = 83$).
Figure 5. Visual depiction of moderation model for investigating the moderating effect of demographic and index offence characteristics on the relationship between protective factor domains and recidivism outcome.
Figure 6. Visual depiction of moderation model for investigating the moderating effect of protective factor domains on the relationship between risk level and recidivism outcome.
References


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doi:10.1002/cbm.754


doi:10.1037/a0022161


doi:10.1177/0093854810386000

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and scoring manual*. Toronto, ON: Pearson Clinical Assessment Canada.

comparative study of adolescent risk assessment instruments: Predictive and


Appendix A

Copy of Youth Court Order to Access Youth Recidivism Records

IN THE YOUTH JUSTICE COURT

ORDER GRANTING ACCESS TO YOUTH RECORDS AND REPORTS
(Sec. 119(1)(a), 119(6) YCJA)

Whereas an application has been made by Mary Ann Campbell Ph.D., Director of the Centre for Criminal Justice Studies at the University of New Brunswick and by Celeste Lefebvre Ph.D., Psychologist with IWK Youth Forensic Services to access youth criminal justice records for the purpose of conducting a study;

And whereas the purpose of the study is to establish a comprehensive database of information relevant to Nova Scotia youth in conflict with the law through the development of an archival database of youth assessed by the IWK Youth Forensic Services since 2006;

And whereas the database will be used to establish normative data, examine psychological and risk profiles of unique subgroups, and enhance the understanding of protective factors that promote resiliency in the face of risk factors;

And whereas information will be drawn from existing IWK forensic files that include Section 34 court ordered assessments from 2006 to the present;

And whereas a privacy Impact Assessment was submitted to the IWK Research Ethics Board for review and deemed to be in compliance with privacy legislation and policies for archival research;

And whereas information gathered is to be used only in aggregate form, with no direct contact with either young people or their parents/guardians;

And whereas information collected from files is to be coded so that cases will be distinguished by randomly selected coding numbers and no personal information is to be recorded on the coding sheet;

IT IS ORDERED that Mary Ann Campbell Ph.D., Celeste Lefebvre Ph. D., and their designates working under the supervision of either of them for the purposes of undertaking the work required for the creation of a database, shall have the right to access recidivism information from the Department of Justice, as well as the records maintained by the IWK Forensic Services from 2000 until the completion of the database, for the purpose of creating such a database. The right to access those records for this purpose shall continue for one year from the date of this order and may be renewed for further periods from time to time.


Barbara Beach
Judge of the Youth Justice Court of Nova Scotia
Appendix B

IWK Forensic Database Coding Guide

**DEMOGRAPHIC VARIABLES**

1. Age at time of assessment in years: ________

2. Date of assessment (MM/DD/YY): ________

3. Gender: Male
   Other, specify ________________________________
   Female
   Unknown

4. Ethnicity:
   Caucasian
   Latino
   Mixed, specify ________________________________
   African Canadian
   Asian
   Other, specify ________________________________
   First Nations
   Middle Eastern
   Unknown

5. Highest grade completed at time of assessment: ________

**COGNITIVE FUNCTIONING**

6. Cognitive functioning assessment tool administered:
   WAIS-IV
   WISC-IV
   K-BIT-2
   None
   Other: __________________

7. Standardized Full Scale IQ: ________

8. Normative level:
   Low
   Borderline
   Low Average
   High Average
   Superior
   Very Superior
   N/A

**ACADEMIC ACHIEVEMENT**

9. Academic achievement assessment tool administered:
   WIAT-III
   WRAT-4
   None
   Other: __________________

10. Standardized Overall Achievement score: ________

11. Normative level:
   Low
   Borderline
   Low Average
   High Average
   Superior
   Very Superior
   N/A

**OFFENCE-RELATED VARIABLES**

12. Index offences at referral (charges or convictions):

*List Codes:*
<table>
<thead>
<tr>
<th>Assault</th>
<th># _____</th>
<th>Sexual</th>
<th># _____</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breaches of supervision</td>
<td># _____</td>
<td>Prostitution, soliciting</td>
<td># _____</td>
</tr>
<tr>
<td>(failure to comply)</td>
<td></td>
<td>Robbery (with or without a weapon)</td>
<td># _____</td>
</tr>
<tr>
<td>Break and enter</td>
<td># _____</td>
<td>Weapons (possession, dangerous use)</td>
<td># _____</td>
</tr>
<tr>
<td>Drug possession, trafficking,</td>
<td># _____</td>
<td>Murder, manslaughter (attempted)</td>
<td># _____</td>
</tr>
<tr>
<td>selling</td>
<td></td>
<td>Uttering threats</td>
<td># _____</td>
</tr>
<tr>
<td>Theft (possession of stolen</td>
<td># _____</td>
<td>Arson</td>
<td># _____</td>
</tr>
<tr>
<td>property, shoplifting)</td>
<td></td>
<td>Liquor (LCA – liquor control act)</td>
<td># _____</td>
</tr>
<tr>
<td>Fraud, forgery</td>
<td># _____</td>
<td>Other (specify codes)</td>
<td># _____</td>
</tr>
<tr>
<td>Mischief, vandalism, destruction of property</td>
<td># _____</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public disturbance</td>
<td># _____</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle (DUI, dangerous</td>
<td># _____</td>
<td></td>
<td></td>
</tr>
<tr>
<td>operation, joyriding)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MVA (motor vehicle act)</td>
<td># _____</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

# of offences in each offence category:
- Violent #____
- Non-violent #____
- Sexual #____
- Technical #____
- Drug #____

MSO code for index offence (if multiple offences, highest severity offence is indicated): ______

13. Recidivism events (charges or convictions) after the assessment date: Yes  No

Date of first recidivism event (MM/DD/YY): _____

Days free in the community before first recidivism event: _____

**List Codes:**

<table>
<thead>
<tr>
<th>Assault</th>
<th># _____</th>
<th>Sexual</th>
<th># _____</th>
</tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>operation, joyriding)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
MVA (motor vehicle act) # _____ ______________________________

# of offences in each offence category:
  Violent #_____  Non-violent #_____  Sexual #_____  
  Technical #_____  Drug #_____  

MSO code for recidivism events (if multiple offences, highest severity offence is indicated):
_______

RISK ASSESSMENT VARIABLES

14. Youth Level of Service/Case Management Inventory (YLS/CMI):
    Total Score: _____  Very Low  Low  Moderate  High  Very High

15. Resiliency Scales for Children and Adolescents (RSCA):
    Mastery Score: _____  Below Average  Average  Above Average
    Relatedness Score: _____  Below Average  Average  Above Average
    Reactivity Score: _____  Below Average  Average  Above Average
## Appendix C

**Most Serious Offence (MSO) Coding System**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>Murder/attempted murder</td>
</tr>
<tr>
<td>24</td>
<td>Serious violent (e.g., assault with a weapon, robbery, kidnapping, extortion)</td>
</tr>
<tr>
<td>23</td>
<td>Sexual violence (i.e., sexual assault/aggravated sexual assault)</td>
</tr>
<tr>
<td>22</td>
<td>Break and enter (includes B &amp; E tools)</td>
</tr>
<tr>
<td>21</td>
<td>Sexual non-violence (sexual interference, possession/making/distribution of child porn)</td>
</tr>
<tr>
<td>20</td>
<td>Trafficking/importing</td>
</tr>
<tr>
<td>19</td>
<td>Weapons offences</td>
</tr>
<tr>
<td>18</td>
<td>Fraud (e.g., uttering forged document, false pretense)</td>
</tr>
<tr>
<td>17</td>
<td>Miscellaneous offences against persons (e.g., uttering threats)</td>
</tr>
<tr>
<td>16</td>
<td>Theft (possession of stolen property)</td>
</tr>
<tr>
<td>15</td>
<td>Common Assault</td>
</tr>
<tr>
<td>14</td>
<td>Property damage (mischief under)</td>
</tr>
<tr>
<td>13</td>
<td>Miscellaneous offences against morals (e.g., prostitution, illegal gambling)</td>
</tr>
<tr>
<td>12</td>
<td>Obstruction of justice (e.g., resisting arrest, escape of custody, obstruction of peace officer)</td>
</tr>
<tr>
<td>11</td>
<td>Drug possession</td>
</tr>
<tr>
<td>10</td>
<td>Traffic criminal code violation (e.g., dangerous driving)</td>
</tr>
<tr>
<td>9</td>
<td>Beach of court order (e.g., fail to comply, unauthorized leave)</td>
</tr>
<tr>
<td>8</td>
<td>Driving while under the influence</td>
</tr>
<tr>
<td>7</td>
<td>Miscellaneous against public order (e.g., petty trespasses, public mischief (not causing damage), false alarm of fire)</td>
</tr>
<tr>
<td>6</td>
<td>Other federal statues</td>
</tr>
<tr>
<td>5</td>
<td>Parole violations (e.g., revocation of parole)</td>
</tr>
<tr>
<td>4</td>
<td>Highway traffic accident</td>
</tr>
<tr>
<td>3</td>
<td>Liquor control act offence</td>
</tr>
<tr>
<td>2</td>
<td>Other provincial statues offences</td>
</tr>
<tr>
<td>1</td>
<td>Municipal bylaws (e.g., parking fines)</td>
</tr>
</tbody>
</table>
Appendix D

Youth Level of Service/Case Management Inventory (YLS/CMI) Items

1. Prior and Current Offenses/Dispositions
   a. Three or more prior convictions
   b. Two or more failures to comply
   c. Prior probation
   d. Prior custody
   e. Three or more current convictions

2. Family Circumstances/Parenting
   a. Inadequate supervision
   b. Difficulty controlling behavior
   c. Inappropriate discipline
   d. Inconsistent parenting
   e. Poor relationship/father-youth
   f. Poor relationship/mother-youth

3. Education/Employment
   a. Disruptive classroom behavior
   b. Disruptive schoolyard behavior
   c. Low achievement
   d. Problems with peers
   e. Problems with teachers
   f. Truancy
   g. Unemployed/not seeking employment

16. Peer Relations
   a. Some delinquent acquaintances
   b. Some delinquent friends
   c. No/few positive acquaintances
   d. No/few positive friends

17. Substance Abuse
   a. Occasional drug use
   b. Chronic drug use
   c. Chronic alcohol use
   d. Substance use interferes with functioning
   e. Substance use linked with offenses

18. Leisure/Recreation
   a. Limited organized activities
   b. Could make better use of time
   c. No personal interests
19. Personality/Behavior
   a. Inflated self-esteem
   b. Physically aggressive
   c. Tantrums
   d. Short attention span
   e. Poor frustration tolerance
   f. Inadequate guilt feelings
   g. Verbally aggressive

20. Attitudes/Orientation
   a. Antisocial/procriminal attitudes
   b. Not seeking help
   c. Actively rejecting help
   d. Defies authority
   e. Callous, little concern for others

Note: This is a copyrighted measure. Items are not intended to be used for research or clinical purposes.
Appendix E

Resiliency Scale for Children and Adolescents (RSCA) Items

Sense of Mastery Scale
1. Life is fair (Optimism)
2. I can make good things happen (Optimism)
3. I can get the things I need (Optimism)
4. I can control what happens to me (Optimism)
5. I do things well (Self-Efficacy)
6. I am good at fixing things (Self-Efficacy)
7. I am good at figuring things out (Self-Efficacy)
8. I make good decisions (Self-Efficacy)
9. I can adjust when plans change (Self-Efficacy)
10. I can get past problems in my way (Self-Efficacy)
11. If I have a problem, I can solve it (Self-Efficacy)
12. If I try hard, it makes a difference (Self-Efficacy)
13. If at first I don’t succeed, I will keep on trying (Self-Efficacy)
14. I can think of more than one way to solve a problem (Self-Efficacy)
15. I can learn from my mistakes (Adaptability)
16. I can ask for help when I need to (Adaptability)
17. I can let others help me when I need to (Adaptability)
18. Good things will happen to me (Optimism)
19. My life will be happy (Optimism)
20. No matter what happens, things will be all right (Optimism)

Sense of Relatedness Scale
1. I can meet new people easily (Comfort)
2. I can make friends easily (Comfort)
3. People like me (Comfort)
4. I feel calm with people (Comfort)
5. I have a good friend (Support)
6. I like people (Trust)
7. I spent time with my friends (Trust)
8. Other people treat me well (Trust)
9. I can trust others (Trust)
10. I can let others see my real feelings (Trust)
11. I can calmly tell others that I don’t agree with them (Tolerance)
12. I can make up with friends after a fight (Tolerance)
13. I can forgive my parent(s) if they upset me (Tolerance)
14. If people let me down, I can forgive them (Tolerance)
15. I can depend on people to treat me fairly (Tolerance)
16. I can depend on those closest to me to do the right thing (Tolerance)
17. I can calmly tell a friend if he or she does something that hurts me (Tolerance)
18. If something bad happens, I can ask my friends for help (Support)
19. If something bad happens, I can ask my parent(s) for help (Support)
20. There are people who will help me if something bad happens (Support)
21. If I get upset or angry, there is someone I can talk to (Support)
22. There are people who love and care about me (Support)
23. People know who I really am (Trust)
24. People accept me for who I really am (Trust)

**Emotional Reactivity Scale**
1. It is easy for me to get upset (Sensitivity)
2. People say that I am easy to upset (Sensitivity)
3. I strike back when someone upsets me (Sensitivity)
4. I get very upset when things don’t go my way (Sensitivity)
5. I get very upset when people don’t like me (Sensitivity)
6. I can get so upset that I can’t stand how I feel (Sensitivity)
7. I get so upset that I lose control (Impairment)
8. When I get upset, I don’t think clearly (Impairment)
9. When I get upset, I react without thinking (Impairment)
10. When I get upset, I stay upset for about one hour (Recovery)
11. When I get upset, I stay upset for about several hours (Recovery)
12. When I get upset, I stay upset for the whole day (Recovery)
13. When I get upset, I stay upset for several days (Recovery)
14. When I am upset, I make mistakes (Impairment)
15. When I am upset, I do the wrong thing (Impairment)
16. When I am upset, I get into trouble (Impairment)
17. When I am upset, I do things that I later feel bad about (Impairment)
18. When I am upset, I hurt myself (Impairment)
19. When I am upset, I hurt someone (Impairment)
20. When I am upset, I get mixed-up (Impairment)

*Note:* This is a copyrighted measure. Items are not intended to be used for research or clinical purposes.
CURRICULUM VITAE

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UNIVERSITIES ATTENDED

2011 – Present  Ph.D.  Clinical Psychology (CPA Full Accreditation)  
                 University of New Brunswick, Fredericton, New Brunswick  
                 Supervisor: Mary Ann Campbell, Ph.D., L. Psych

2005 – 2010  B.A.  Psychology (First Class Honours)  
              University of Calgary, Calgary, Alberta  
              Supervisors: Keither Dobson, Ph.D. & Laurie Ching, M.A.

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publication.


**PRESENTATIONS**


