

Risks, Strengths, and Recidivism Among Justice-Involved Youth:  
Investigating Gender Differences and Similarities

by

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### Abstract

Though males are involved in more crime than their female counterparts, females are increasingly coming to the attention of the corrections and criminal justice system. To guide the assessment and management of youthful offenders, different theoretical perspectives offer an explanation on the etiology of criminal behaviour for both males and females. Traditional quantitative research claims that the same risk factors are relevant for both male and female involvement in crime (i.e., the *Central Eight*; Bonta & Andrews, 2017) and as such are known as gender neutral theories. Pathways research on the other hand has found evidence for gender differences resulting from the unique experiences of women and girls including victimization, mental health, and dysfunctional relationships, calling for a gender responsive approach. Models to assess importance of these factors have emerged and evolved over time into more than the just a determination of risk to criminally recidivate; risk assessment has also become about identifying important intervention targets to guide and monitor progress in treatment, resulting in a more effective use of scarce resources (Clements, 1996; Mills, 2017). As such, the importance of strength factors in the assessment of risk has become an integral component (Farrington, 2013; Van Voorhis, 2012). The impetus for the current research was to identify important risk and strength factors predictive of criminal recidivism for both male and female justice-involved youth, through a meta-analytic review and an empirical validation of a gender informed risk assessment tool. Overall, this study found evidence in support of the *Central Eight* for both males and females as gender neutral factors as hypothesized, however preliminary findings emerged at the level of the individual indicators providing evidence for gender saliency (predictive for both genders

but stronger in one) and gender specificity (predictive for one gender only) in the prediction of general and violent recidivism. Thus, accepting gender similarities at the domain level of risk and strengths and failing to accept that there are gender differences at the level of individual indicators will result in inaccurate assessments and missed opportunities to improve youths' lives. Further, such assessments will miss the mark on identifying key indicators to provide effective strategies to reduce risk and enhance quality of life for both males and females. Limitations such as small sample size and interpretation of findings as preliminary are discussed. The strength of the methodologies for both studies was the inclusion of a male comparison group to enable gender comparisons and make recommendations for the evidence of gender specificity and gender saliency, a limitation of previous meta-analytic and quantitative work. The findings of these studies contribute to the support of a gender informed theory of crime and have important implications for practice to take gender differences into account, beyond responsivity, to allow for the development of appropriate intervention strategies that are streamlined and targeted to make the best use of resources.

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## **Chapter 1: Introduction**

The impact of crime is far-reaching, especially youth perpetrated crime. In Canada, it is estimated to cost \$100, 000 annually to incarcerate a youth in a secure custody facility (Augimeri & Slater, 2012; Community Safety and Crime Prevention Council, 2007). In the U.S., the estimate to keep a youth in a juvenile detention facility is \$150, 000 (USD) for 9 months to a year (Campaign for Youth Justice, 2016). Beyond the financial burden, the human cost is significant; youths, who have not yet fully developed into their potential selves are faced with potential life-changing consequences when they engage in crime at such a young age. Fortunately, within both Canada and the U.S. the reported rates of youthful offending are declining—the U.S. has witnessed a steady decline since 1996, with its lowest level reported in 2014 (OJJDP Statistical Briefing Book, 2017), particularly for violent crime (Butts, 2016), while in Canada the rate of youth crime has been declining since 1991 (Allen & Superle, 2016).

The purpose of the current chapter is to provide a general overview of how women and girls have traditionally been regarded within the correctional and criminal justice system alongside the current state of affairs. Different theories of crime from a gender neutral and a gender responsive perspective that have accounted for male and female involvement in crime will be discussed, as will the different risk factors that have emerged from each of these perspectives and their relevance for each gender. Further, attention will be given to the role of risk assessment and how it has evolved over time, particularly with women, through successive generations that now place an increased emphasis on strength factors. Lastly, this overview will discuss the limitations of the field to date and how further empirical research can contribute to the current debates.

**Girls in Conflict with the Law**

Despite the overall downward trend in youth crime, the rate at which young girls and women are becoming caught up in the criminal justice system (CJS) has been on the rise in Canada (Hotton Mahony, 2011) and the United States (Puzzanchera, 2013). For young girls, this has been estimated at a rate triple that of adult women in Canada (Hotton Mahony, 2011). Nicholls, Cruise, Greig, and Hinz (2015) report that the increase in the number of females coming to the attention of the CJS (e.g., for arrests), is not equal to that of males but significantly greater. Two hypotheses have been put forward to account for the discrepancy in the rates of male and female involvement in crime – the behavioural change hypothesis and the policy change hypothesis (Schwartz, 2013).

The behavioural change hypothesis posits that women and girls are actually engaging in more crime and violent behaviour due in part to increased freedom and gender equality (Schwartz, 2013). From this perspective, one possibility that accounts for increased crime and violence (among females) is that females are experiencing more economic stress than ever before, and as a consequence are engaging in more violence as a coping strategy in response to frustration from being unable to achieve financial stability through legitimate means (Schwartz, 2013). Another possibility is postulated to be a change in gender role expectations whereby females are exposed to media messages that condone violence, and as such, are now more likely to adopt violent behaviour as part of their behavioural repertoire (Schwartz, 2013), facilitated by less supervision and more freedom (Brown, Blanchette, & Dean, 2017).

Alternatively, the policy change hypothesis stipulates that net-widening of violent crime definitions (i.e., expanding the definition of violence to include less serious and

minor acts of aggression and violence; Schwartz, 2013) has disproportionality impacted girls and women (Javdani, Sadeh, & Versona, 2011). Schwartz (2013) argues that the expanded definitions of violence result in more females being targeted for arrest. Further, Schwartz (2013) postulates that net-widening has broadened the violent crime definition to include more violence perpetrated in private settings and among intimate/familial relationships which is also said to differentially impact more females than males (de Vogel & Nicholls, 2016).

Evidence in favour of the policy change hypothesis has emerged, primarily based on the incongruence among different data sources that do not collectively demonstrate evidence for an increase in antisocial and violent offending among females across data sources (e.g., while official police crime statistics evidence an increase in female-perpetrated crime, particularly violent assaults, victimization surveys do not) (Brown, Blanchette et al., 2017; Javdani et al., 2011; Schwartz, 2013; de Vogel & Nicholls, 2016).

In fact, when compared to their male counterparts, it is well documented that women and girls commit less crime, both in number and severity (Fagan, Van Horn, Hawkins, & Arthur, 2007; Kong & AuCoin, 2008; Nicholls et al., 2015; Schwartz & Steffensmeier, 2012). For example in Canada, Allen and Superle (2016) report that male youth are 2.5 times more likely to be accused (i.e., charged) of a crime than female youth; similarly female youth are less likely to be charged for violent offences compared to their male counterparts (44% versus 55%; Allen & Superle, 2016).

It goes without saying that females represent a smaller proportion of the overall correctional population, however the increasing rate in which they are becoming involved with the criminal justice system compared with their male counterparts, has garnered

attention from both practitioners and scholars. Even though females will never commit more crime than males in terms of base rate (Becker & McCorkell, 2011), the fact that females are increasingly being arrested and incarcerated at a higher rate than in the past (though lower than their male counterparts), warrants the attention and focus of criminal justice personnel.

### **Theories of Crime**

Historically, due to the smaller proportion of females within the criminal justice system, most research accounting for the etiology of crime is based on males (Nicholls et al., 2015). Different theoretical accounts have emerged to date, including recent work more germane to females. Of relevance to the current dissertation work are the elucidations of the three broad conceptualizations – the gender neutral, gender responsive, and gender informed theories of crime. Each perspective will be discussed briefly, including the extent to which they are able to speak (or not) to female-specific involvement in criminal conduct.

**Gender neutral theories of crime.** A gender neutral theory of crime operates from the perspective that there are many similarities between males and females. As such, a gender neutral theory (in principle) operates the same for both genders; in the context of crime a gender neutral theory of crime would posit for example that the pathways to crime are the same for males and females (Blanchette & Brown, 2006; Nicholls et al., 2015). Relatedly, empirically derived risk factors from gender neutral models are posited to predict equally well for both males and females and thus treatment targets/approaches based on these key risk factors are expected to bear no difference in the applicability for males and females (Bonta & Andrews, 2017). As defined by Brown

and Motiuk (2008), factors can (and should) be classified as gender neutral if they are found to predict criminal behavior equally well for both males and females. In other words, if factors are predictive for both males and females and there are no *significant* differences in the magnitude of prediction, then said factors are considered gender neutral.

Evidence in support of gender neutrality can be seen in Hyde's work and the gender similarities hypothesis. From an extensive review of the psychological literature quantifying differences between males and females on key psychological constructs (e.g., cognition, personality and social psychological variables), Hyde (2005; 2014) found that males and females are similar on most psychological variables (i.e., 78% the effects were small or close to zero, indicating no significant differences between males and females; Hyde 2005). However, notable differences did emerge (e.g., spatial performance, sensation seeking, physical aggression). One of the most prominent gender neutral theories of crime is the general personality and cognitive social learning theory (Blanchette & Brown, 2006).

***General personality and cognitive social learning theory (GPCSL).*** With roots in social learning and self-control theory, according to the GPCSL the decision to engage in crime is influenced by various factors immediately located within the situation (i.e., opportunity) or distally located (i.e., from political, economic or cultural influences; Bonta & Andrews, 2017); that is, the individual is exposed to situations that reward and encourage antisocial behaviour (Bonta, 2000), and crime occurs when the rewards exceed the costs. The probability of continuing to engage in criminal conduct stems from the density of signaled rewards and costs (Bonta & Andrews, 2017). Thus, social learning

theory contributes to the GPCSL in that criminal behaviour is learned through definitions that are supportive or not supportive of crime (Burgess & Akers, 1966; Sutherland, 1947) and through classical and operant conditioning (Bandura, 1973). An additional component of this perspective that accounts for engagement in criminal conduct is differential association (Sutherland, 1947). An individual is more likely to engage in criminal conduct if they associate with others involved in antisocial behaviour and who are of a similar mindset (i.e., antisocial attitudes). Hirchi's social control theory (2002) plays a role here as well—through four social bonds of attachment (good quality attachment to prosocial others), commitment (engagement in conventional behaviour), involvement (time and energy spent on conventional activities), and belief (view that people should obey common rules); crime is said to occur when social bonds are broken. Overall, the GPCSL theory posits that criminal conduct occurs through social learning and differential association, the probability of which increases when the elements of associates and attitudes operate concurrently (Bonta & Andrews, 2017).

Several researchers have established support for this theory as an explanation of criminal offending for both males (Akers, 1998; Akers & Jensen, 2003; Andrews et al., 2012; Brown & Motiuk, 2005; Green, 2006; Pratt & Cullen, 2000) and females (Green, 2006; Hubbard & Pratt, 2002; Simourd & Andrews, 1994). Further, some have argued that social learning theory can account for why males engage in more criminal behaviour, due to differences in the socialization process between males and females. For example, males have more access and exposure outside the home to become involved with negative peers, whereas females are not exposed at the same rates due to greater restrictions, including supervision and control in the home (Belknap, 2015; Day, Zahn, &

Tichavsky, 2015). However, others express concern that this theory does not account for the possibility of how these constructs could operate differently (i.e., the differential expression of risk factors) with respect to gender (Morash, 1999). Overall however, support for this theory is widespread and provides the foundation for core correctional practice framed around the model of Risk, Need, and Responsivity (RNR).

*Risk-need-responsivity (RNR) model.* Conceptualized by Andrews, Bonta, and Hoge (1990), RNR has become a leading model in offender rehabilitation. The RNR model is comprised of the three key principles of risk, need, and responsivity, defined as follows. First, the *risk principle* states that the level of service (i.e., intervention) should match the risk level of an offender, where the most intensive interventions (i.e., dosage) are reserved for the highest risk, highest need offenders<sup>1</sup>. Second, the *need principle* states that intervention efforts should target criminogenic needs (i.e., dynamic needs that when targeted for change have demonstrated reductions in recidivism) as opposed to non-criminogenic needs (i.e., dynamic needs that when targeted do not reduce recidivism). Dynamic needs can be stable (i.e., change slowly such as antisocial attitudes, or acute (i.e., change rapidly such as negative mood) (Hanson, Harris, Scott, & Helmus, 2007). Bonta and Andrews (2017) state that focusing on non-criminogenic needs rather than criminogenic needs can actually lead to increased recidivism. Further, Gendreau, French and Taylor (2002) found that targeting multiple criminogenic needs resulted in the greatest reductions in recidivism. Finally, the *responsivity principle* is comprised of *general* and *specific* responsivity. *General responsivity* speaks to how interventions

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<sup>1</sup> Research has shown that higher intensity programming with low risk offenders can actually increase recidivism (Lowenkamp, Latessa, & Holsinger, 2006)

should be delivered to offenders, whereas *specific responsivity* accounts for the individual characteristics of the offender. More specifically, *general responsivity* states that the most effective type of treatment is based on cognitive-behavioural techniques and *specific responsivity* claims that treatment approaches must take into account biological (e.g., sex differences), social (e.g., gender differences, cultural diversity), and psychological factors (e.g., personality), and be delivered in a manner that is consistent with the learning style and abilities (e.g., motivation, intelligence) of the offender (Andrews et al., 1990).

Through a rehabilitative lens, the RNR model is based on the *principle of human service* – that is, the major causes of crime should be addressed through human, clinical, and social services, and not deterrence, restoration, just desert and due process (Bonta & Andrews, 2017). When all principles of this model have been adhered to, empirical evidence demonstrates significant reductions in recidivism (Olver, Stockdale, & Wormith, 2014; Smith, Gendreau & Swartz, 2009).

There is some evidence to support the use of the RNR model with female offenders. In 1999, Dowden and Andrews conducted a meta-analytic review of 26 treatment outcome studies with female only or predominately female samples. They reported that recidivism went down among female offenders by approximately 16% when higher risk offenders were targeted, intervention efforts were focused on criminogenic needs, and programs were cognitive-behavioural in nature, providing evidence for RNR.

**Risk factors.** Risk factors have been conceptualized as conditions or variables associated with a higher likelihood or probability of a negative or undesirable outcome (Bender & Lösel, 1997). In the correctional context, risk factors when present are associated with an increased likelihood of antisocial or criminal behaviour (Cottle, Lee,

& Heilbrun, 2001). Further, Bonta (2002) distinguished between two important types of risk factors: static and dynamic. Static factors are historical and do not change (or they change in one direction; Bonta, 2002). These factors are important predictors of recidivism (e.g., criminal history). Dynamic factors (also known as criminogenic needs discussed previously), in contrast, are factors that when targeted for change (i.e., through intervention) result in a reduction of risk (Bonta & Andrews, 2017). Importantly, as stated dynamic factors can be ‘slow changing’ such as antisocial attitudes or ‘acute’ such as negative mood or intoxication (Hanson et al., 2007). Dynamic factors then are predictors of recidivism as well as indicators for change (Brown, Serin, Forth, Nunes, Bennell, & Pozzulo, 2017). Methodologically speaking, to measure the predictive ability of risk factors with respect to negative outcome (i.e., recidivism), studies must be longitudinal – either retrospective or prospective - in nature.

***Posited gender neutral risk factors.*** The major risk factors highlighted from the gender neutral perspective and widely accepted among many who study correctional psychology are the *Central Eight* (Bonta & Andrews, 2017) which include: (1) history of antisocial behaviour, (2) antisocial personality pattern, (3) antisocial cognition, (4) antisocial associates, (5) family/marital circumstances, (6) education/employment, (7) leisure/recreation, and (8) substance abuse. Based on the GPCSL theory discussed, it is expected that any interventions that target these key risk/need domains will have the ability to lower the propensity for engaging in criminal behaviour irrespective of race, ethnicity, gender or age (Bonta & Andrews, 2017). Importantly, as previously emphasized any differences with respect to gender, age or culture for example can sufficiently be addressed through the principle of responsivity. Consequently, a gender

neutral theory does not indicate a need for gender specific variables or any unique circumstances to be incorporated into estimates of risk. Chiefly, the *Central Eight* risk factors are equally applicable to both males and females and should inform any risk assessment protocol or intervention strategy. From the gender neutral perspective, additional hypothesized gender specific factors do not significantly contribute to an individual's propensity to engage in criminal conduct (i.e., they have low predictive accuracy as risk factors; Bonta & Andrews, 2017).

*Critique of gender neutral perspective.* A central challenge against the gender neutral perspective is the lack of emphasis placed on gender, particularly during the model development process (Nicholls et al., 2015). Gender neutral models emerged from empirical research based on methodologically sound treatment and outcome studies, however for the most part the samples either did not include females as a significant subgroup and/or the results were not disaggregated by gender to observe gender differences (Blanchette & Brown, 2006). Specifically, gender neutral models are criticized for prioritizing only the aspects empirically related to offending and ignoring the context or individualized needs (Hannah-Moffat, 2010), or even factors that are salient or specific for either gender (Benda, 2005; Blanchette & Brown, 2006; Brown & Motiuk, 2008; Van Voorhis, Wright, Salisbury, & Bauman, 2010).

Gender neutral models are criticized on generalizability (i.e., whether the same theoretical constructs can account for offending of both males and females; Daly & Chesney-Lind, 1988; Kruttschnitt, 2016), as well as the gender ratio problem (i.e., why females are less likely to commit crime than males; Daly & Chesney-Lind, 1988). It is argued that gender neutral models reproduce the male normative criteria despite

evidence that female criminality is different in motivation and interconnectedness of substance abuse, mental health, and trauma/victimization (Hannah-Moffat, 2009). A key contention with the gender neutral perspective is that the identification of criminogenic needs decontextualizes the female experience by focusing on problems within the individual while ignoring the social and structural context (Hannah-Moffat, 2010), and reframing needs as risk factors that are narrowly defined (i.e., in relation to men; Daly & Chesney-Lind, 1988). Accordingly, the focus of gender neutral models on addressing needs becomes problematic as the theory posits that needs left unaddressed become risks, which arguably could result in over-classification of females (Hannah-Moffat, 2010), the consequence of which is placement in overly restrictive environments (Bloom, Owen, & Covington, 2003) and inappropriate decisions (Van Voorhis & Presser, 2001).

Further empirical research is needed that disaggregates findings by gender (including considerations for differences within gender as well as the different expression of gender – e.g. transgender) to establish the validity of key risk factors for both males and females to make more definitive statements regarding gender saliency (i.e., predictive for both males and females however the magnitude of effects is greater for one gender over the other) and gender specificity (i.e., predictive for one gender and not the other). Once important risk factors are identified, then work on developing algorithms that take into account gender saliency and specificity (Blanchette & Brown, 2006) can begin to ensure valid and relevant classifications of risk are being made (Van Voorhis & Presser, 2001) for both genders. Once developed, these classification schemes should be normed and validated with women and girls (Van Voorhis & Presser, 2001).

**Gender responsive theory of crime.** A gender responsive theory of crime approaches an etiology of offending from the ground up for females; that is, the focus is on the experience of women and girls and not simply a comparison to the male experience (Chesney-Lind & Shelden, 2004; Daly & Chesney-Lind, 1988). Gender responsive has also been specified in the literature as gender specific, gender salient, gender sensitive, and/or gender centered, however important distinctions have been made between gender salient and gender specific (Brown & Motiuk, 2008). In particular, gender saliency is defined as predictive for both males and females, however there is a stronger magnitude of the effect for one gender over the other, whereas gender specificity is defined as significantly important for one gender and not the other (Brown & Motiuk, 2008).

Contrary to the gender similarities hypothesis promoted by Hyde (2005; 2014), the underlying premise of a gender responsive theory of crime is that there are inherent differences between males and females that must be taken into consideration (Daly & Chesney-Lind, 1988; de Vogel & Nicholls, 2016; Hannah-Moffat, 2009; Steffensmeier & Allen, 1996). It is important to note that there exists variability in the conceptualization of a gender responsive approach that has been developed from scholars within the disciplines of psychology (Salisbury & Van Voorhis, 2009), criminology (Bloom et al., 2003; Covington & Bloom, 2006), and sociology (Ritchie, 1996). However, collectively a gender responsive perspective supports a holistic approach to better understand how mental health, substance abuse, relationship dysfunction, victimization and re-victimization interconnect to bring about recidivism (Bloom et al., 2003; Brennan, Breitenbach, & Dieterich, 2008; Chesney-Lind & Shelden, 2004; Johansson & Kempf-

Leonard, 2009; McClelland, Farabee, & Crouch, 1997; Salisbury & Van Voorhis, 2009). While at the same time, the goal of a gender responsive approach is also to strengthen positive relationships and enhance well-being and empowerment (Hannah-Moffat, 2009; Van Voorhis, 2012). Moreover, for Covington and Bloom (2000), gender responsive is “creating an environment...that reflects an understanding of the realities of women’s lives and addresses the issues of participants” (p.12). Further, a gender responsive approach addresses social and cultural factors (e.g., poverty, race, class and gender inequality) as well as issues of abuse, violence, family relationships, and substance abuse (Bloom et al., 2003). Relatedly, the work of Van Voorhis and colleagues has attempted to validate gender responsive work by incorporating gender neutral risk factors alongside the gender responsive factors in an attempt to improve classification efforts for female offenders (Van Voorhis et al., 2010; Wright, Van Voorhis, Salisbury, & Bauman, 2012). One prominent female-centered or gender responsive theory of crime is Pathways Theory (PT) (Belknap, 2015).

*Pathways theory.* Pathways researchers posit that women and girls engage in crime as a result of negative life experiences that contribute to criminal activity through the intersection of mental health issues (i.e., anxiety, depression, feelings of worthlessness), substance abuse, relationship dysfunction, and re-victimization (Belknap, 2015; Bloom et al., 2003; Brennan et al., 2008; Chesney-Lind, 1997; Chesney-Lind & Shelden, 2004; Daly, 1992; Finkelhor & Baron, 1986; Johansson & Kempf-Leonard, 2009; McClelland et al., 1997; Salisbury & Van Voorhis, 2009; Simkins & Katz, 2002). Pathways researchers theorize that female perpetrated crime is survival-based and catalyzed in response to a culmination of unique female factors, often referred to as a

criminalized survivor theory of crime (Chesney-Lind & Shelden, 2004). PT posits that females develop maladaptive coping strategies to negative life events such as trauma and victimization and subsequently run away from home, abuse substances and commit crimes of survival (e.g., prostitution, dealing drugs, or robbery; Blanchette & Brown, 2006; Chesney-Lind, 1997). Further, PT posits that increased contact with the CJS resulting from these survivalist crimes leads to further oppression, lack of control, placement in overly restrictive environments, and further re-victimization (Chesney-Lind, 1997).

Much of the evidence to support the pathways perspective is based on qualitative accounts from in-depth interviews with women and girls involved in crime (Daly, 1992; Dehart, 2008; Gilfus, 1992; Ritchie, 1996; Simpson, Yahner, & Dugan, 2008). These studies have convincingly demonstrated the prevalence of victimization, substance abuse, and economic marginalization within these individuals' lives. There is evidence to show that some of these factors are important in the lives of males (e.g., child abuse; Spatz Widom, 1989; 2017), however there is some research evidencing higher prevalence and predictive salience of recidivism among females (Benda, 2005).

Quantitative research does exist showing some support for the PT model in female samples. More specifically, these studies have found evidence for predictors of recidivism such as childhood maltreatment, substance use, mental health concerns, dysfunctional relationships, and economic marginalization among samples of women (Brennan, Breitenbach, Dieterich, Salisbury, & Van Voorhis, 2012; Holtfreter & Morash, 2003; Jones, Brown, Wanamaker, & Greiner, 2014; Lynch et al., 2017; Salisbury & Van Voorhis, 2009). Overall, proponents of a gender responsive model operate from the

assumption that women and girls follow unique pathways to crime and are consequently different from their male counterparts—with unique needs and treatment requirements.

*Posited gender responsive risk factors.* Gender-responsive theories of crime have placed greater emphasis on factors such as trauma and victimization (e.g., childhood abuse and neglect), relationship problems, mental health concerns (internalizing more so than externalizing), and family dysfunction, poverty, alcohol/ drug abuse, self-concept (e.g., lack of self-esteem and/or self-efficacy), and parental issues (Bloom et al., 2003; Morton & Leslie, 2005; Salisbury & Van Voorhis, 2009; Van Voorhis et al., 2010). From the research conducted, there is some evidence to suggest that some of the proposed gender responsive factors may actually be applicable to both genders (e.g., substance abuse, antisocial peers; Bloom et al., 2003; Van Voorhis, 2010) as well as more significant among females (e.g., education and employment, family, substance abuse (Hubbard & Pratt, 2002; Olver et al., 2014; Salisbury & Van Voorhis, 2009).

A fundamental discord between the gender neutral and gender responsive perspectives is the focus on the differential experience of key risk factors that may be applicable to both genders, in addition to the possibility that unique gender specific factors exist. For example, antisocial peers is posited to be an important risk factor for both males and females, however the manner in which the risk factor expresses itself for males and females is different. In other words, for males the influence of antisocial friends and peers pose a risk whereas there is evidence to show that the influence of criminal romantic partners pose a risk for females.

The increased use of quantitative methods to identify important risk factors (beyond correlation and prevalence) and the inclusion of females broken down by gender,

together with the valuable contributions of qualitative research that exists to date have provided significant movement in the way forward for work with women and girls. It is becoming easier to identify important key risk factors for both males and females and establish the magnitude of any differences where they exist. Further empirical work is needed to inform assessment and management approaches grounded in factors relevant to the experience of women and girls.

*Critique of gender responsive perspective.* The pathways perspective has been criticized for being too one-dimensional (Blanchette & Brown, 2006; Odgers, Moretti, Burnette, Chauhan, Waite, & Dickon Reppucci, 2007). In other words, pathways theory is unable to explain other pathways to crime other than a survival-based mechanism and cannot solely account for the complexity of female criminality (Kruttschnitt, 2016). Additionally, evidence is largely based on correlational, qualitative, and/or prevalence studies of females. Further, the available research does not include male comparison groups which are needed to draw conclusions on gender differences (Blanchette & Brown, 2006).

In sum, to move the gender responsive perspective forward, a shift from correlational and prevalence studies to a focus on more methodologically rigorous research that includes males and females within studies to properly enable statements on gender similarities and differences is needed (Kruttschnitt, 2016). Further research is needed to substantiate the gender responsive factors as valid predictors of recidivism and treatment targets in the programming needs of women and girls. Clearly, further conceptualization and operationalization of the constructs highlighted by gender responsive proponents is needed (Hannah-Moffat, 2010) to establish the significance of

these factors in accounting for criminal behaviour for women and girls, and to what extent they may also be relevant for males. Thus, empirical validation of risk assessments that have incorporated hypothesized gender responsive risk factors in samples of both males and females would help address some of the limitations with the gender responsive work.

**Gender informed theory of crime.** A gender informed theory of crime incorporates aspects of both the gender neutral and the gender responsive theories, underscoring the importance of factors such as substance abuse, trauma and/or victimization, poor mental health, unhealthy relationships (the “gender-responsive-big-four”, Scott, Brown, & Wanamaker, 2017), low self-worth, economic marginalization/poverty, parental stress, unsafe living situations, and female specific health needs (Blanchette & Brown, 2006, Bloom et al., 2003; Gobeil, Blanchette, & Stewart, 2016; Salisbury & Van Voorhis, 2009; Van Voorhis, 2012) in addition to the *Central Eight* posited by the gender neutral theory (Bonta & Andrews, 2017). Importantly, a gender informed perspective is about understanding that while certain risk factors may be the same for males and females, the expression (e.g., operational definition) and underlying experience (e.g., antisocial associates, mental health) of these factors could be very different for each gender; this perspective further assumes that both the gender neutral and gender responsive perspectives provide valuable contributions (Blanchette & Brown, 2006). Additionally, that there is a need to understand and contextualize the experience of justice involved females through their own stories and narratives (Salisbury, 2016). Steffensmeier and Allen (1996) opine that a gender informed perspective is one that can explain both female and male criminality, account

for differences in type and frequency of offending, and explain underlying differences in the context of offending.

*General strain theory.* One such model that has been used to account for gender differences in crime is general strain theory (GST; Agnew, 1985; Agnew, 1992; Broidy & Agnew, 1997). GST considers how individual strains and coping mechanisms in response to strain can vary by gender. For example, negative peer relationships, problems with peers, and educational difficulties are significant strains for males (Broidy & Agnew, 1997; Puhmann, 2015), whereas sexual abuse, excessive family demands, negative relationships, and financial strains are identified for females (Baron, 2007; Broidy & Agnew, 1997; Mazerolle, 1998; Puhmann, 2015). Additional research to explore gender differences in strains, that takes differential experiences and emotional responses to strains into consideration will shed some much-needed perspective on where important differences exist.

### **Evolution of Risk Assessment – An Overview**

To this point, the identification of key risk factors posited from theoretical accounts of male and female criminality have been discussed. The related field of generic risk assessment focusses on how best to combine these risk factors into estimates of risk and targets for intervention (Mills, 2017). Over time, risk assessment has evolved from clinical judgement (1<sup>st</sup> generation) with no direction on what information to consider or how the information should be weighted (Bonta, 1996), to empirically derived assessment with guidance on measuring key risk factors, scoring algorithms, assessing change, and the integrating strength factors (4<sup>th</sup> generation; Mills, 2017). A more in depth discussion of each of these generations, as well as an alternative approach to risk

assessment – Structured Professional Judgement (SPJ) is discussed in Chapter 3. A key element of risk assessment as it exists today is the integration of strength factors into assessment schemes and the role they play in mitigating risk and developing intervention strategies from a strengths-based rather than deficits-based model.

**The emergence of strength factors.** In more recent years there has been an increased emphasis placed on strength factors in offender assessment and management. Generally speaking, strengths are defined as something positive or prosocial in an individual's life (Jones, Brown, Robinson, & Frey, 2015). As such, strength factors in theory, have the potential to counteract (i.e., decrease or mitigate) the influence of a risk factor or simply reduce the likelihood of a negative outcome irrespective of the presence or absence of a risk factor(s). Strength factors have also been described as promotive or protective factors.

A promotive factor is negatively correlated with recidivism, such that when the promotive factor increases, the risk of recidivism decreases, having a direct effect on the outcome, irrespective of risk level (Loeber, Pardini, Stouthamer-Loeber, & Raine, 2007; Van der Put, Van der Laan, Stams, Deković, & Hoeve, 2011). Alternatively, a protective factor is “a variable that predicts a low probability of offending among persons at risk or interacts with a risk factor to nullify its effect” (Farrington, 2013). Put another way, a protective factor is thought to buffer or reduce the effect of a risk factor, by reducing the probability of a negative outcome (Jones et al., 2015). Importantly, the focal point of a protective factor is the interaction between the risk and the protective factor, where it is said to buffer or reduce the effect of a risk factor, thus influencing the probability of a negative outcome (i.e., recidivism), particularly among moderate and high risk cases.

Thus, although some researchers use the terms protective and promotive interchangeably they do in fact have distinctly different meanings (Jones et al., 2015).

Until more recently, the practice of risk assessment was based on a deficits or pathology-focused model; that is, the focus has been on what is wrong with an individual or what they are lacking that increases their likelihood to commit crime. In recent years however, the focus has shifted in an effort to try to better understand and identify what factors are present that might serve to decrease or mitigate the risk of criminal behaviour (Baglivio, Wolff, Piquero, Howell, & Greenwald, 2017).

Given the relative interest in working from a strengths-based model, a better understanding of important strength factors is warranted. As it stands, the research to date on strength factors is not equal to the state of the research on risk factors. A next logical step would be to identify key strength factors that are quantifiably linked to criminal outcomes and recidivism, which could be achieved through quantitative techniques such as meta-analysis.

*Empirical research on strengths.* One of the earliest accounts of the importance of strengths-based factors is reflected in the work of Werner (2005). Among a birth cohort of 698 individuals born on the island of Kauai, Hawaii, Werner (2005) identified important strength factors (referred to by Werner as protective factors) within the individual (e.g., temperament), the family (e.g., attachment to others), and the community (e.g., emotionally supportive neighbours, teachers, church groups) that contributed to positive developmental outcomes (i.e., competent, confident, and caring adults). Participants in her study were followed for forty years to explore the impact of both biological and psychological risk factors, as well as protective factors on the development

of these individuals as adults. Despite the exposure of the sample to multiple risk factors including poverty, family discord, and stressful life events, at forty years of age, the participants were thriving as adults, successfully demonstrating the protective effect of continuing education (e.g., college and adult high schools), marital stability, active participation in religion, and recovery from a life-threatening illnesses or accidents (Werner, 2005). For these individuals, this study demonstrated the importance of individual characteristics (e.g., temperament), positive social bonds with caregivers and family, and positive community support as protective factors that mitigated the adversity experienced by these individuals, and in particular for females, many of whom were considered stable and recovered from adversity in mid-life (Werner, 2005).

Within the correctional context, most of the empirical work conducted on strength factors to date has focused on factors associated with onset and maintenance of crime during childhood and adolescence rather than adult recidivism. Generally, Farrington (2013) describes the following categories of factors identified through research with adolescents: 1) biological (e.g., intelligence, temperament); 2) family (e.g., parental supervision); 3) school (e.g., academic achievement); 4) peers (e.g., non-deviant, prosocial peers); and 5) neighbourhood (e.g., non-deprived, non-violent). In particular, Farrington (2013) and Loeber, Slot, and Stouthamer-Loeber (2008) signal the importance of school and peer factors as particularly relevant for youthful offenders. Others have emphasized the importance of prosocial opportunities (including school; Fagan et al., 2007), family structure and rules, family support, attachment to parents and rewards for behaviour (Carr & Vandiver, 2001; Fagan et al., 2007); prosocial attitudes and skills (moral beliefs and social skills, positive attitudes towards police, getting along well with

others; Carr & Vandiver, 2001; Fagan et al., 2007; Loeber et al., 2008); and peer selection (having some or many prosocial friends; Carr & Vandiver, 2001; Loeber et al., 2008). Further work to empirically establish the validity of these strength factors and the identification of others that mitigate or buffer the influence of risk is needed. Within correctional psychology, often the end goal of assessing risk is to provide some indication as to the likelihood of an individual engaging (or re-engaging) in criminal behaviour. As indicated by Lodewijks, de Ruiter, and Doreleijers (2010), the consequences of dismissing strengths include reduced accuracy in prediction, and an inability to appropriately inform interventions that will enhance strengths and encourage desistance. Similarly, Miller (2006) claims that the over-prediction of risk is a consequence of ignoring factors that mitigate or influence risk. As stated by Wanamaker, Jones, and Brown (2017), further research is required to determine the validity of supplementing current risk assessment approaches (based on the deficits-based model) with the measurement of strengths. The emergence of this shift is starting to come to fruition with the development and validation of risk assessments that incorporate strengths.

The Structured Assessment of Violence Risk in Youth (SAVRY; Borum, Bartel, &Forth, 2006) is one of the first standardized assessment tools to include risk and protective factors associated with violence (Lodewijks et al., 2010). The protective factors included in the SAVRY are variables that reflect involvement and commitment to conventional society and include prosocial involvement, strong social support, strong attachment and bonds, positive attitude toward intervention and authority, strong commitment to school or work, and resilient personality (Lodewijks et al., 2010), many of which are highlighted in the research on strengths. An important distinction made in

the assessment of the protective variables of the SAVRY is that they are not simply the absence or inverse of risk. For example, while peer rejection is a risk factor, the sheer absence of peer rejection or peer acceptance is not automatically considered a protective factor, rather “strong attachment and bonds” or “strong social support” are considered protective factors (Lodewijks et al., 2010). This characteristic of the SAVRY therefore suggests that strengths should be able to demonstrate a unique and incremental relationship to the outcome of interest above and beyond risks (Jones et al., 2015). Among three validation samples of known violent male offenders with average ages between 14 and 17 years, Lodewijks et al. (2010) found the Protective Scale of the SAVRY to significantly increase the predictive accuracy beyond that of using the Dynamic Risk Scale of the SAVRY alone.

Two tools developed by Orbis Partners, the Youth Assessment and Screening Instrument (YASI; Orbis Partners, 2000) and the Service Planning Instrument (SPIn; Orbis Partners, 2003) also incorporate strength factors in the assessment of risk. Both measures will be described in more detail in Chapter 3, however, briefly the YASI is a measure of risk assessment for recidivism in justice-involved youth (i.e., custody, parole, and probation) and the SPIn is geared towards the assessment of adults. Jones and colleagues (2015, 2016) have successfully demonstrated the incremental predictive validity of the strength scores on these scales above the inclusion of the risk factors alone. Further research that investigates the conceptualization of strength factors as protective or promotive) would be a significant contribution and as such will be explored further in Chapter 3.

Based on the preliminary work that has been done on strengths to date, there are

important questions to be answered. Specifically, what are the strength factors overall that are associated with positive outcome (i.e., reduced recidivism) and how should strengths be conceptualized (as promotive or protective)? Are they sufficiently different from risk that their consideration is warranted beyond responsivity, and should be incorporated into risk management because of their influence on overall level of risk (Wanamaker et al., 2017)? A good starting point to begin to address these questions is for research to identify the key risk factors that have demonstrated empirical association with reductions in recidivism from a systematic review of research conducted to date. Further, models that have incorporated strengths into the assessment of risk (i.e., YASI) should be tested for their ability to add incrementally to the prediction of risk (i.e., greater predictive accuracy above the inclusion of risk factors alone) and measure relevant contributions of strength factors as promotive or protective factors.

### **Chapter Summary**

Although the general youth crime rate has been on the decline for the past two decades, women and girls have been garnering increased attention from correctional practitioners and scholars. In comparison to their male counterparts, females represent a much smaller proportion of the overall correctional population and up until recently have been neglected by the CJS. The presence of females in the justice system, no matter how small of a population they represent, warrants our attention.

The gender neutral and gender responsive perspectives have identified a number of risk and strength factors with some degree of overlap. More research (preferably longitudinal in nature that includes both males and females together) is needed to establish the link between hypothesized factors and criminal outcomes to adequately

speak to gender differences. The literature has been saturated with studies investigating the importance of risk factors, and as such the construct of risk is well-understood. The same cannot be said for strengths. It was not until more recently that a paradigm shift was seen from a deficits-based model to a strengths-based one that considers the impact (if any) strength factors may have on estimates of risk. To date, research suggests that examining strengths is a relatively novel approach and thus additional research is required to more clearly define the construct of strengths and establish which factors have the most impact on risk prediction models, as well as examine if gender differences exist. Notably, preliminary investigations have demonstrated promising results (Jones et al., 2015; 2016; Lodewijks et al., 2010).

In all, important questions remain. The goal of the two studies to be presented as part of the current dissertation work is to contribute to the ongoing discussion on the need for gender considerations concerning risk and strength factors. Chapter 2 presents the results of a meta-analysis on the risk and strength factors predictive of recidivism among justice-involved male and female youth, and Chapter 3 presents the empirical validation of a gender informed risk assessment model, the Youth Assessment and Screening Instrument among a sample of justice-involved youth from central and eastern Ontario. The final chapter incorporates the results of the two studies into a general discussion on gender considerations with respect to both risk and strength in the prediction of recidivism among youthful offenders and discusses contributions for both theory and practice.

## **Chapter 2: Risk and Strength Factors Associated with Recidivism Among Female and Male Justice-Involved Youth: A Meta-Analysis**

### **Abstract**

There is an ongoing debate regarding the existence of hypothesized female-specific risk and strength factors within adolescent offender populations (Farrington, 2013; Van Voorhis, 2013). Thus, using meta-analytic techniques the purpose of this study was to examine if risk and strength factors predict recidivism differentially between male and female justice-involved youth. Extensive database searching of PsychInfo, Criminal Justice Abstracts, NCBI, Scopus, PubMed Central, and Scholars Portal identified 22 studies that met the inclusion criteria, representing 50,601 justice-involved youth (11,952 females and 38,649 males). A total of 584 effect sizes were coded from the potential pool of risk and strength predictors categorized into the following domains: criminal history, family circumstances and parenting, education and employment, substance abuse, leisure/recreation, personality/behaviour, attitudes/orientation, mental health, and child abuse. At the risk factor domain level, there is evidence of gender neutrality for 60% of the global domains – antisocial peer relations, problematic family circumstances and parenting, education and employment concerns, substance abuse, antisocial personality/behaviour, and antisocial attitudes/orientation were equally predictive for males and females, while criminal history and poor use of leisure/recreation time emerged as gender specific for males (i.e., predictive for males but not for females). At the domain level, mental health and child abuse were not significantly predictive for either males or females, contrary to the specified hypotheses. The individual indicators for maltreatment/neglect and physical abuse did emerge as significantly predictive for

both males and females, and the meta-analyzed difference score between males and females was not significantly different; thus, maltreatment/neglect and physical abuse were equally predictive of recidivism for both males and females (i.e., gender neutral) and are considered small effects (i.e., Cohen's  $d < .30$ ). Gender differences however, emerged at the individual risk factor indicator level providing evidence for gender saliency (e.g., chronic alcohol use for females, chronic drug use for males) and gender specificity (e.g., out of home placements for females, current school problems for males). At the strength factor domain level six of the seven global strength domains emerged as significant in the prediction of success (i.e., no recidivism) –prosocial peer relations was gender neutral (i.e., equally predictive for both males and females – Cohen's  $d$  difference score confidence interval contained zero), rejection or absence of substance use was gender salient (males), prosocial values and attitudes was gender specific (females), family relationships and support, education and employment opportunities were gender specific (males). The strength domain of personality approached significance (confidence interval overlapped with zero) with a large effect for the girls ( $d = .54$ ) and a null effect ( $d = .01$ ) for the males. Cohen's  $d$  difference score also approached significance that would indicate personality as a salient factor for the females. The extra-curricular/leisure time as a strength domain was not predictive of success (i.e., no recidivism) for either males or females. Limitations relating to the small number of primary studies are discussed. Together, the results provide support for a gender informed theory of crime—one that borrows from both the gender neutral and gender responsive paradigms and has important implications for practice. Though there is evidence of gender neutrality at the global level of risk and strength factors, it is no longer acceptable to ignore the

preliminary evidence of significant gender differences that exist at the indicator level.

Thus, advancing the future of gender informed practice with justice-involved youth will require careful consideration of important gender differences when it comes to key risk and strength factors contributing to engagement in criminal conduct.

### **Introduction**

Currently, there remains an ongoing debate as to “what works” when it comes to the assessment and management of female offenders. As discussed in Chapter 1, there are two working hypotheses on how best to approach work with women and girls – a gender neutral approach and a gender specific (i.e., responsive) approach. Briefly, a gender neutral approach is one that approaches the etiology of offending from the perspective of gender similarities, whereby empirically derived risk factors inform risk assessment and management approaches in the same way for both males and females (Bonta & Andrews, 2017). Gender neutral models, though developed from sound, rigorous methodological approaches have been criticized for their lack of consideration for females – female samples were either not included or the results were not disaggregated to provide any information on gender differences (Blanchette & Brown, 2006). Further they are also criticized for the focus on the *Central Eight* risk predictors while remaining silent on context or individualized needs that may be salient or specific for either gender (Benda, 2005; Blanchette & Brown, 2006; Brown & Motiuk, 2008; Hannah-Moffat, 2010; Van Voorhis et al., 2010). Alternatively, the gender responsive approach is one that focusses on the experience of women and girls as different from their male counterparts (Chesney-Lind & Shelden, 2004; Daly & Chesney-Lind, 1988) and supports a holistic approach that underscores interconnections among mental health, substance abuse, relationship dysfunction, and re-victimization as significant contributors to offending specific to women and girls (Bloom et al., 2003; Brennan et al., 2008; Chesney-Lind & Shelden, 2004; Johansson & Kempf-Leonard, 2009; McClennan et al., 1997; Salisbury & Van Voorhis, 2009). The gender responsive work has primarily been criticized for the lack of

male comparison groups and the provision of evidence beyond correlational, qualitative, and prevalence estimates (Blanchette & Brown, 2006). Thus, the primary goal of this study was to calculate an average effect for the risk factors posited from both a gender neutral and a gender responsive perspective, in addition to the strength factors that have been proposed to date with justice-involved youth. The current study was undertaken to address the limitations of previous meta-analytic attempts and to contribute to the field by identifying gender differences in risk factors, as well as strength factors in the prediction of recidivism among justice-involved youth.

As discussed in Chapter 1, from the gender neutral approach there is convincing evidence regarding the key risk factors that predict crime. Widely cited and supported in correctional psychology are Bonta and Andrews' (2017) *Central Eight* risk factors of crime: history of antisocial behaviour, antisocial personality pattern, antisocial cognition, antisocial associates, family/marital circumstances, education/employment, leisure/recreation, and substance abuse. Based on sound empirical evidence from predictive and treatment studies, a large amount of evidence including a number of meta-analytic reviews has accumulated and saturated the literature over the years in support of factors posited by the gender neutral approach, particularly with males (Olver et al., 2014). The evidence in support of gender responsive factors however has not amassed on the same scale but continues to gain momentum in the field (de Vogel & Nicholls, 2016). An updated meta-analysis that includes studies comprised of both males and females, compares risk factors from both the gender neutral perspective and the gender responsive perspective at the same time, and assesses relevant strength factors among justice-involved youth would serve to address the limitations of previous work conducted more

than 10 years ago, and make a significant contribution to the field.

Fortunately, researchers are increasingly starting to disaggregate data by gender and including males and females in the same study. Thus, in recent years there has been a growing body of primary studies that include males and females, which can help directly answer the question - what (if any) are unique and/or stronger predictors for females than males. As such, the potential for gender differences in the predictors of recidivism has important implications for assessment and intervention practices with youth in conflict with the law. Specifically, do we need to develop risk tools from the ground up for girls and women, or can we tweak existing ones by weighting certain variables differently? To answer these questions, there is first a need to specifically identify which factors have emerged as gender neutral—equally predictive for both genders in magnitude, gender salient—predictive for both genders but stronger for one gender vs. the other, or gender specific—solely predictive in one gender, but not the other. To date, scholars have made attempts to quantify the evidence into average effects by gender through meta-analytic reviews.

### **Contributions of Past Meta-Analyses**

Earlier work has attempted to quantify differences in risk factors for females and males. Using meta-analytic techniques to summarize results across the empirical literature, significant contributions have been made, though these results are now dated. Previous meta-analytic work on youthful offending has been limited by a) focusing on correlates (i.e., rather than predictors) of criminal offending (Simourd & Andrews, 1994; Green, 2006; Hubbard & Pratt, 2002), b) lacking in studies with samples of both males and females (to measure gender differences), and c) measuring the effects of risk factors

rather than strength factors. The study by Cottle et al. (2001) looked beyond correlates and considered the predictors of recidivism, however did not examine strength factors.

In 1994, Simourd and Andrews determined that general risk factors posited by gender neutral advocates were important for female and male youth. Using a meta-analytic approach Simourd and Andrews (1994) examined whether there were any gender differences on eight general risk factors (i.e., lower social class, family structure/parent problems, personal distress, minor personality variables, education difficulties, poor parent-child relations, temperament/misconduct and delinquent peers/attitudes) and other (e.g., victimization, lack of hobbies/involvement, accommodation problems), as correlates of delinquency (i.e., not predictors of recidivism). A total of 60 studies (conducted within the 30 years prior) met the inclusion criteria (that is, male and female youth were sampled, each gender was sampled on the same risk factor, and data were reported separately for each gender), resulting in 464 effect sizes (i.e., correlates of delinquency). Overall, Simourd and Andrews found evidence in support of gender neutral factors as antisocial attitudes and peers ( $r_{females} = .39$ ,  $r_{males} = .40$ ), temperament and/or misconduct problems ( $r_{females} = .35$ ,  $r_{males} = .36$ ), educational difficulties ( $r_{females} = .24$ ,  $r_{males} = .23$ ), problematic parent-child relations ( $r_{females} = .20$ ,  $r_{males} = .22$ ), and minor personality ( $r_{females} = .18$ ,  $r_{males} = .22$ ) were most strongly associated with delinquency for both males and females. Their findings are somewhat limited in that they only included correlational studies (i.e., studies that measured true predictive ability of factors were not included) and did not distinguish any difference between the correlates of initial offending vs. those that actually predict re-offending (i.e., recidivism) (Cottle et al., 2001). As well, Simourd and Andrews highlighted that some of the constructs measured

(e.g., victimization, accommodation) were not well defined or adequately measured, thus further limiting conclusions that could be drawn.

Another significant contribution was made by Cottle et al. (2001). In their meta-analysis to predict re-arrest for any type of new offence among youth between the ages of 12 and 21, Cottle and colleagues identified 22 articles from 1983 to 2000 that met their inclusion criteria (studies were to include youth aged 12 to 21 with a minimum of one prior arrest and provide data on subsequent offending reported through official records or self-report)<sup>2</sup>. A total of 30 predictor variables were coded and grouped into the following domains: demographic information, offence history, family and social factors, educational factors, standardized tests scores, substance use history, clinical factors, and formal risk assessment (Cottle et al., 2001). In general, Cottle and colleagues reported that the broad risk factors including criminal history, family problems, ineffective leisure time, antisocial associates, conduct problems, and non-severe pathology (such as stress and anxiety) were significantly associated with recidivism among justice-involved youth. The reported indicators of risk with the largest effects were reported for age at first commitment ( $Zr = -.35$ )<sup>3</sup> age at first contact with the law ( $Zr = -.34$ ), non-severe pathology ( $Zr = .31$ ), family problems ( $Zr = .28$ ), and conduct problems ( $Zr = .26$ ). As discussed by the authors, the findings were also plagued with similar limitations reported for the Simourd and Andrews study – there were few studies that reported on the prospective

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<sup>2</sup> Note the total number of effects from these 22 studies was not reported. In addition there was no indication on the requirement to provide data disaggregated by gender nor were gender comparisons made.

<sup>3</sup>  $Zr$  = reported weight mean effect size (Fisher's weighted Z transformation, see Cottle et al., 2001).

relationship between predictors and outcome limiting the number of studies that could contribute to an aggregate effect. As well, a limited number of studies examined a violent and/or sexual outcome, thus limiting the ability to make conclusions regarding different types of recidivism (Cottle et al., 2001). Finally, results were not aggregated by males and females to speak to gender differences. At the time, the authors made recommendations for more prospective, primary research to provide better estimates of important indicators for youthful offenders.

In an effort to identify risk factors for delinquency among females, Hubbard and Pratt (2002) conducted a meta-analysis that focussed exclusively on adolescent female offenders. They identified a total of 11 studies conducted between 1982 and 1998, that contributed a total of 97 effect size estimates (Hubbard & Pratt, 2002). Risk factor domains were coded into four broad categories – 1) strongest predictors of delinquency—prior history of antisocial behaviour, antisocial peers, antisocial attitudes/beliefs, and antisocial personality, 2) social-structural/socio-demographic factors—age, socioeconomic status, 3) social interaction factors—family relationships, school relationships, physical or sexual abuse, and 4) behavioural/attitudinal/personality factors—self-image, social adjustment, anxiety, and IQ (Hubbard & Pratt, 2002). Using the Fisher's  $Z$  transformation of  $r$ , Hubbard and Pratt reported large effect sizes (though notably there were very few studies contributing to the effect size) for females on antisocial peers ( $Zr = .53$ ) and antisocial behaviours ( $Zr = .48$ )<sup>4</sup>, however the researchers

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<sup>4</sup> It is important to note that large effects were reported for these two variables, however the number of effect size estimates contributing to the average effect was 2 for both these variables.

also found evidence for the importance of school relationships ( $Zr = .25$ ), and abuse ( $Zr = .21$ ) as variables worthy of further consideration.

Despite the reported large effects and significance of variables from both the gender neutral perspective (i.e., antisocial peers and antisocial associates) and gender responsive perspective (i.e., abuse), there are important limitations of this meta-analysis that should be noted. First, there was no statement of the explicit inclusion criteria or a definition of female offending indicated by the authors, limiting the ability to make any determinations of the measurement of the variables as correlational or longitudinal or a combination of both, nor could the comprehensiveness of the study be assessed, which is a common criticism of meta-analysis (Borenstein, Hedges, Higgins, & Rothstein, 2009). Second, and perhaps most importantly, they did not include a male comparison group to speak to gender differences, thus they were only able to provide an estimate for the females and could not speak to the difference in the magnitude of the effects.

Finally, in 2006, the work of Simourd and Andrews was updated by Greene who was interested in studying gender saliency<sup>5</sup>. Including 83 studies from 1990 to 2004 and 1771 corresponding effect sizes, Green meta-analyzed data that was disaggregated by gender to study the association between risk factors across nine predictor domains (social context, family factors, academic factors, social functioning, substance use, history of antisocial behaviour, attitudes, mental health, and child maltreatment) and outcome (delinquency and recidivism – general) and thus draws conclusions regarding gender saliency. To be included, studies were required to meet the following criteria: studies had

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<sup>5</sup> Recall from Chapter 1 that gender saliency is defined as a factor that is predictive for both genders, but stronger for one gender over the other (Brown & Motiuk, 2008).

to be published between 1990 and 2004, measure delinquency and/or recidivism in adolescence, provide sufficient detail to enable the calculation of Pearson  $r$ , and include samples of males and females with results disaggregated by gender (Green, 2006).

In general, Green concluded that there were many similarities in the risk factors associated with delinquency (73% overlap in confidence intervals for general delinquency) and recidivism (84% overlap in confidence intervals for recidivism). The strongest associations with general delinquency, were reported for antisocial attitudes ( $r = .36$ ) and substance abuse ( $r = .36$ ) for both males and females. When compared across gender, antisocial behaviour emerged as a stronger predictor for males for general delinquency ( $r = .39$ ) and for females, the strongest predictor was substance abuse ( $r = .39$ ). For recidivism, the strongest predictor for males and females was antisocial attitudes (males  $r = .32$  and females  $r = .19$ , though both were based on 1 effect size estimate).

Though Green included studies with results disaggregated by males and females (47 studies), she also included studies that reported on effects sizes for males only (34 studies) and females only (2 studies) which adds additional between group differences in estimates that could bias the results in favour of gender differences. Specifically, the inclusion of males and females within a study removes the between group differences, thus creating a superior methodology when only these studies are included. A meta-analysis can be conducted using studies that report on males and females in separate studies, however between group differences are no longer accounted for in effect size estimates (Borenstein et al., 2009). A meta-analysis that includes only studies with results disaggregated by gender is a better-quality method and will produce more accurate effect size estimates. In addition, as noted by Green one of the major limitations of her study

was that there were so few primary studies contributing to the effect sizes, particularly for important variables like substance abuse, antisocial attitudes, history of antisocial behaviour, and child maltreatment. Similar to the other meta-analytic reviews discussed, the study conducted by Green focused exclusively on identifying risk factors with no mention or consideration of strength factors. Given the direction the field has taken with respect to the inclusion of strength factors in the practice of risk assessment, the inclusion of strength factors in an updated meta-analysis is timely.

### **Rationale for Present Meta-Analysis**

Despite the limitations of the meta-analytic studies published to date, the strength of meta-analysis is the ability to provide a quantifiable summary of the status of the research literature. Previous meta-analyses have been limited by the state of the current literature at the time, which as was demonstrated, often failed to include samples of both males and females (or failed to disaggregate the results by gender), was unable to identify sufficient studies that measured predictors of delinquency and recidivism prospectively (i.e., through longitudinal methods), and did not include studies on strengths (which have begun to emerge in greater number only more recently). At this juncture, the field would best be served by conducting an updated search for relevant research and using meta-analytic techniques to provide a summary effect of significant predictors of young offender recidivism separated by males and females to enable gender comparisons that considers the important risk factors, in addition to strength factors. Only now are more studies beginning to emerge that have attempted to define and quantify the notion of strength factors, and how they should be measured (i.e., as promotive or protective factors). Further, there are a sufficient number of studies that include both males and

females in the same study affording the opportunity to examine gender differences directly.

As previously stated, there is a need to better understand salient risk and strength factors related to recidivism among adolescent offenders, and to understand to what extent these factors are similar and/or different for female and male justice-involved youth. Thus, the primary goal of this study is to identify relevant risk and strength factors and quantifiably link them to criminal outcome (i.e., recidivism) through an extensive and systematic meta-analytic review of the available literature. The main purpose of this research is to answer two specific research questions:

**Research question 1: What are the risk factors that predict recidivism among justice-involved youth and is there any evidence of gender neutrality, saliency, and specificity?**

a) *Are there gender neutral risk factors that predict recidivism among justice-involved youth?* That is, are there risk factors that predict equally well for both male and female youthful offenders? At the global level, the risk factor domains that have emerged from the gender neutral theory of crime are posited to predict equally well for both males and females. Empirical work has provided general evidence for the well-known *Central Eight* (Bonta & Andrews, 2017) risk factors (i.e., overall domains of criminal behaviour, antisocial personality, antisocial attitudes, antisocial peer relations, problematic family circumstances and parenting, education/employment problems, and poor use of leisure time) as predictive for both males and females (Cottle et al., 2001; Green, 2006; Hubbard & Pratt, 2002; Schwalbe, 2008; Smith et al., 2009; Olver et al., 2014; Simourd & Andrews, 1994).

*Hypothesis 1a: it is expected that the overall global domains of criminal history, antisocial personality, antisocial associates, antisocial attitudes, family/marital problems, education/employment deficits, and poor use of leisure time will be equally predictive of recidivism for both males and females.*

b) ***Are there gender salient risk predictors of recidivism among justice-involved youth?*** Gender salient risk factors are those that are predictive for both males and females, however the magnitude is stronger for one gender over the other. The significance of the relationship between substance abuse and offending among females has been reported (Andrews et al., 2012; Bloom et al., 2003; Lynch et al., 2017; Olver et al., 2014; Salisbury & Van Voorhis, 2009; Salisbury, Van Voorhis, & Spiropoulos, 2009; Van Voorhis & Presser, 2001). In addition, victimization including childhood abuse and maltreatment has been implicated in the lives of both male and female children, however there is some evidence to suggest that childhood abuse is a salient risk factor for females (i.e., the magnitude of the effect has been found to be stronger for females). This has been demonstrated in previous meta-analytic work (Brennan et al., 2012; Hubbard & Pratt, 2002; Green, 2006), primary studies (e.g., Artz, Hoffman-Wanderer, & Moulton, 2012), and theoretical accounts (Bloom et al., 2003). Finally, research has suggested a difference in the experience of mental health and offending, as more salient (i.e., greater magnitude) for females (Bloom et al., 2003; Brennan et al., 2012; Hannah-Moffat, 2009; Johannson & Kempf-Leonard, 2009; Lynch et al., 2017; Salisbury & Van Voorhis, 2009; Salisbury et al., 2009; Van Voorhis & Presser, 2001, Van Voorhis et al., 2008).

*Hypothesis 1b: it is hypothesized that the global domains of substance abuse, childhood abuse (all types), and mental health will be gender salient (i.e., stronger predictors of recidivism) for females.*

c) ***Are there gender specific risk factors that predict recidivism among justice-involved youth?*** Specifically, what are the risk factors that predict recidivism for one gender and not the other? From the pathways theory, criminal risk factors thought to be specific for female offenders include history of running away (Chesney-Lind & Merlo, 2015; Johansson & Kempf-Leonard, 2009), out of home placements (Kempf-Leonard & Sample, 2000), and unsafe housing (e.g., living arrangements; Bloom et al., 2009; Brennan et al., 2012; Brown & Motiuk, 2005;).

*Hypothesis 1c: it is hypothesized that the individual indicators of history of running away, out of home placements, and living arrangements will be female specific (i.e., predictive for females and not males).*

**Research question 2: What are the strength factors that predict success (i.e., no recidivism) among justice-involved youth and is there any evidence of gender neutrality, saliency or specificity?** Given the relative infancy of the consideration of strength factors in risk assessment, there are no specific hypotheses regarding gender neutrality, gender saliency, or gender specificity. With the emergence of studies focusing on strength factors in more recent years (Farrington, 2013; Jones et al., 2015, 2016; Van Voorhis, 2013), it is reasonable to expect factors such as family relationships and support, education/employment opportunities, prosocial peer relations, and prosocial values and attitudes to emerge as significant strength factors in the prediction of success (i.e., no recidivism) among adolescent justice-involved youth.

## Method

### Inclusion and Exclusion Criteria

To be included, studies must have reported on the predictors of recidivism for female and male criminal justice-involved youth (i.e., aged 18 and younger) including those who were arrested, detained, charged, or adjudicated (e.g., sentenced); “risky” behaviour was not sufficient to be included, as the interest was “criminal offenders, not just incorrigible youth” (Machinski, 2007, p. 27). Studies must have provided sufficient information to calculate an effect size (Cohen’s  $d$ ) and the corresponding variance. In addition, females and males must have been analyzed separately to enable an effect size calculation for each gender. The best way to assess between group differences is when the two groups of interest (i.e., males and females) have been explicitly examined in the same study rather than examining between group differences across different studies (e.g., comparing the effect size of males on history of abuse measured among a sample of males ( $n = 138$ ) with a probation record in rural central California (Myner, Santman, Cappelletty, & Perlmutter, 1998) to an effect size for females on history of abuse conducted with a female sample of youth ( $n = 238$ ) in a Midwestern state correctional facility (Archwamety & Katsiyannis, 1998). The inclusion of studies that contribute an effect for both groups of interest is desirable because the between group differences are taken into account and as a result yield a more precise estimate that is not confounded by the possibility of differences between the studies (Borenstein et al., 2009). It is entirely possible to conduct a meta-analysis that contributes the effect size from different studies for each of the two groups of interest, however as indicated above, the meta-analysis will yield potentially biased estimates because of differences between the studies.

**Predictors and effect size.** Within the literature there are different metrics to report the relationship between a predictor and an outcome. For this study, to calculate an effect size for the predictors of recidivism, the measurement of the indicator must have occurred temporally before the recidivism event, which could include longitudinal studies—prospective or retrospective. As such, specific research designs were targeted provided that the measurement of the predictor occurred before the recidivism outcome. Cohen's  $d$  was chosen as the effect size measure for this study given the ease with which it can be calculated from data often presented in empirical studies (i.e., Cohen's  $d$  can easily be calculated from means and standard deviations) compared to the challenge of  $AUC$ 's which require standard errors to calculate variance (which is inconsistently or often not reported). If additional information was required to calculate an effect size, authors were contacted via email for further information.

**Targeted outcomes.** Given this was a study to measure the strength of an association between predictors and recidivism, the outcome of interest was any new contact with the criminal justice system (e.g., petition, re-referral, arrest, conviction, adjudication/sentence) following an initial [index] offence. In any instances where more than one type of outcome was reported in a study (e.g., arrest/referral and adjudication/conviction), the more restrictive measure was chosen rendering a more conservative estimate.

**Inclusion of treatment studies.** Treatment studies were not excluded if it could be established that measurement of the predictor variable occurred before any intervention efforts so as not to contaminate the possible relationship strength between predictor and outcome. Among the final studies included, there were no treatment studies

that met the inclusion criteria.

**Independence of effect sizes.** To honour the principle of independence of observations required careful screening of articles to identify and remove overlapping samples. This was achieved by examining in greater detail, studies reported by the same author to identify any overlap in timeframes and/or location of study. As indicated above, when more than one outcome was reported (i.e., arrest and conviction), the more conservative estimate was coded also in accordance with this principle. As a result, in any given analysis only one effect size per study was included<sup>6</sup>.

### **Selection of Studies**

A comprehensive search of the existing empirical literature was conducted to identify relevant research studies that met the specified list of inclusion criteria. Databases such as PsycInfo, Criminal Justice Abstracts, NCBI, Scopus, PubMed Central, Scholars Portal, as well as government websites were searched for the following terms and key words: juvenile, delinquen\*, adoles\*, youth\*, young offen\*, young-offen\*, at-risk, risk\*, strength\*, protective, buffer\*, predict\*, resilien\*, recid\*, reoffen\*, relapse\*, recon vict\*, rearrest\*, risk scale\*, tool\*, offen\*, crim\*, delinquen\*, incarcerated\*, inmate\*, parole\*, probation\*, justice-involve\*, justice involve\*, prison\*, adjudicate\*. There was no established timeframe for inclusion of articles. Collectively, from all databases searched, a total of 20,464 articles were considered 'hits' from these search terms and publication dates of potential 'hits' ranged from 1909 through to 2016. Reference lists

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<sup>6</sup> One study disaggregated the results by ethnicity (Study ID: 11), though including two effect sizes from this study (one for the two ethnic groups, White and Black) did not result in any participant being double counted and thus adhered to the principle of independence.

from related meta-analyses and articles that met the inclusion criteria were searched for additional articles – a total of 6 articles from reference lists and contact with authors were included to be screened, as the majority of articles screened through the additional sources were already included in the search database. Reference lists were saved, sorted, and catalogued using Mendeley Software version 1.17.6. The final search end date for the study was May 4, 2016.

After the elimination of many duplicates identified from across the databases searched, as well as all irrelevant articles, a total of 4485 remained to be screened by abstract or full-text article. Where necessary, authors were contacted to provide additional information to allow for the calculation of effect size and variance. Studies were not followed up if they were more than 10 years old and/or if number of reported females in the study were less than 30<sup>7</sup>. Figure 1 provides a detailed overview of the identification and screening process that led to the final selection of studies.

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<sup>7</sup>Though the Tri-Council Policy Statement (TCPS) on the Ethical Conduct for Research Involving Humans (2014) does not prescribe a definitive statement on data retention for research purposes, its founding agencies (Canadian Institute for Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada) have provided guidelines following funded research for data retention periods of up to 7 years. The Office of Research Integrity under the U.S. Department of Health and Human Services has referenced similar guidelines (i.e., 3 years) following the completion of financial reporting (Coulehan & Wells, n.d.). As stated in the TCPS minimum and maximum retention periods are to be determined based on research discipline and decided with members of research ethics boards. It is reasonable to assume then that original datasets containing the necessary information for meta-analytic calculation would no longer be available if the study was more than 10 years old. Additionally, it is reasonable to expect that primary authors would not necessarily be in the position to access datasets if they have changed positions, particularly in the case of thesis datasets. Additionally, a decision was made not to contact authors if a study contained less than 30 female participants, as the aggregated data by gender would not be sufficiently large to conduct any meaningful analyses.

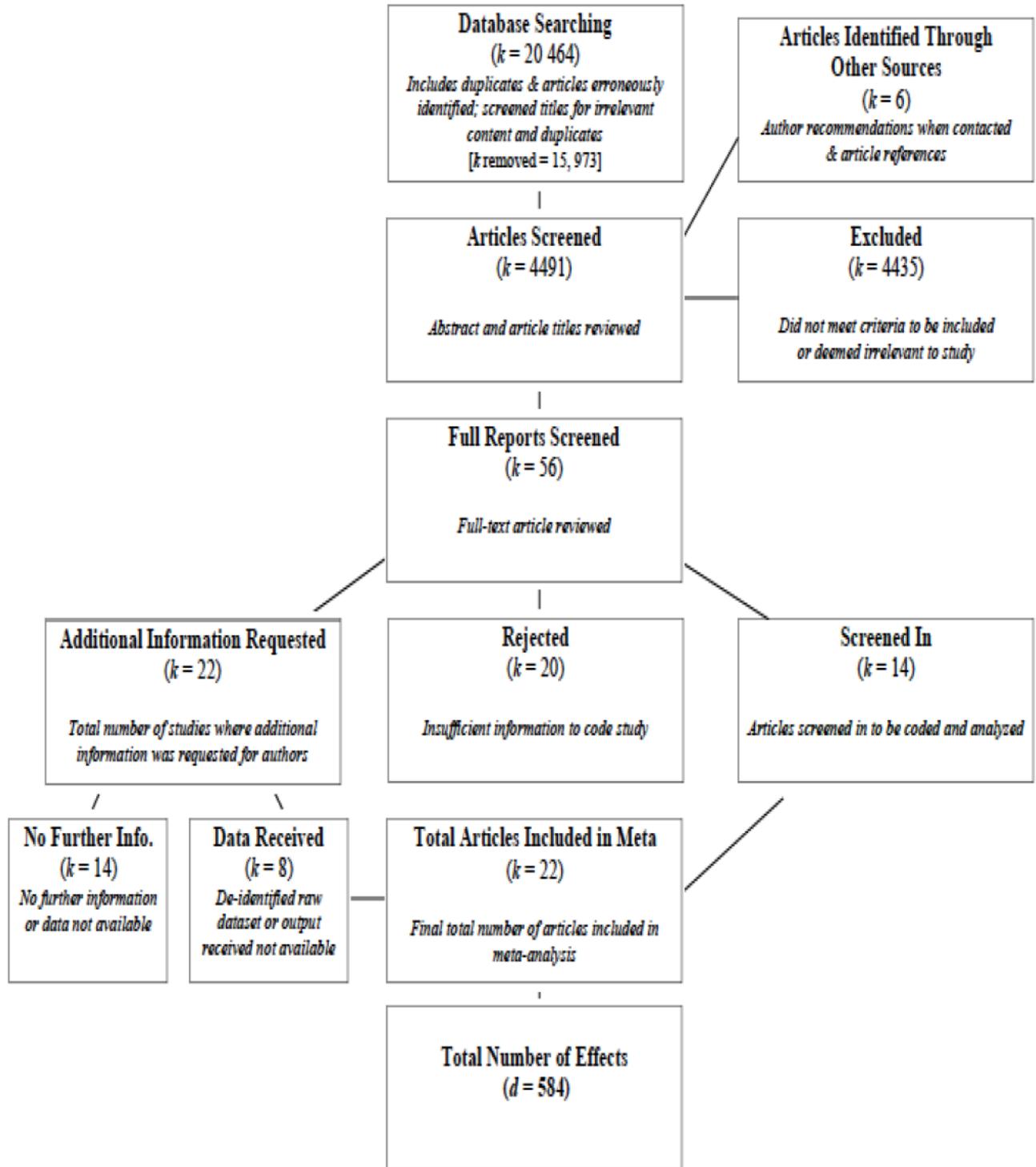


Figure 1. Search and screening process of the identification of relevant studies to include in meta-analysis

### **Coding Procedure**

All studies were coded using a comprehensive coding guide (refer to Appendix A) developed by the primary author that included study details (e.g., year, sample description, publication information, peer review, country of study, length and type of follow up, recidivism type), as well as information pertaining to each specific effect size coded - description of predictor, name of scale or instrument (if applicable), type of follow-up, type of recidivism (if more than one). The coding manual remained a fluid document that was revised throughout the coding process to capture relevant information as it was reported in primary studies.

**Targeted domains and individual indicators.** The global risk domains and individual predictors that were identified and coded from the literature are presented in Table 1. The targeted strength domains are presented in Table 2 that follows. It should be noted that fewer studies contributed data on strength factors and for the six studies that did, strength factors could be coded at the global domain level only (i.e., strengths were not sufficiently broken down into individual indicators to allow for coding at that level).

Table 1

*Global Risk Domains and Individual Indicators Coded from Included Studies*


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|             |   |
|-------------|---|
| Risk Domain |   |
|             | <i>Individual indicators (scored separately within each domain)</i> |

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|                                    |   |
|------------------------------------|---|
| Criminal history                   | <i>Prior convictions/arrests, failure to comply, prior probation/community supervision, prior custody, number of convictions, prior violence (offences, arrests), prior weapons (offences, arrests)</i> |
| Family circumstances and parenting | <i>Inadequate supervision, difficulty controlling behaviour, inappropriate discipline, inconsistent parenting, family substance abuse, family criminal history</i>                                      |
| Education/school & employment      | <i>Low (academic) achievement, truancy at school, current school problems, unemployed/not seeking employment</i>  |
| Peer relations                     | <i>Delinquent influences, gang affiliated/involved</i>  |
| Substance abuse                    | <i>Chronic drug use, chronic alcohol use</i>  |
| Leisure/recreation                 | <i>Limited organizational activities, could make better use of time, no personal interests</i>  |
| Personality/behaviour              | <i>Physically aggressive, poor frustration tolerance, anger management</i>  |
| Attitudes/orientation              | <i>Antisocial/pro-criminal attitudes, defies authority, callous/little concern for others/no or low empathy, aggressive attitudes</i>   |
| Mental health                      | <i>Mental health problems<sup>a</sup></i>   |
| Child abuse (all types)            | <i>Physical abuse, sexual abuse, maltreatment/neglect</i>   |
| Other adversity <sup>b</sup>       | <i>Living arrangements<br/>History of runaway</i>   |

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 Risk Domain

*Individual indicators (scored separately within each domain)*

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*Out of home placements*

*Suicidality*

Total risk score

*Youth Level of Service/Case Management Inventory (YLS/CMI), Psychopathy Checklist: Youth Version (PCL:YV)*

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Note. <sup>a</sup>Mental health was coded as mental health problems or diagnoses = yes/no <sup>b</sup>Other adversity was not combined into an overall domain total as a result of the diversity of indicators included within this category. The individual indicators are analyzed at the indicator level only.

Table 2

*Global Strength Domains Coded from Included Studies*

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Strength Domain

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Family relationships & support

Education & employment opportunities

Prosocial peer relations

Extra-curricular activities & community support

Personality (honesty, self-efficacy, positive problem-solving)

Prosocial values & attitudes

Rejection or absence of substance use

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**Recidivism.** Defined as any new contact with the criminal justice system, recidivism could include a petition or formally filed charge, re-referral, arrest, conviction, adjudication/sentence following the initial [index] offence, usually after a

specified period of time. As this was a general category of recidivism, any new offence was coded and not broken down by type (violent, sexual, technical)<sup>8</sup>.

***Interrater reliability.*** The coding guide was tested and revised prior to training a secondary rater on the coding procedure. All twenty-two studies were coded by the primary author, and 10 were coded by the secondary rater to perform interrater reliability analyses. After ratings were entered for interrater analysis, a consensus coding was generated for the 10 inter-rater cases and entered in the final dataset for analysis (Babchishin & Helmus, 2013a).

The primary author was the principal rater and coded all articles using the comprehensive coding guide. The second rater was trained following sufficient testing and revision of the coding manual by the primary author. Reporting kappa and percent agreement for categorical variables and intra-class correlation coefficients (ICC)<sup>9</sup> for continuous variables, these statistics demonstrate a high level of agreement for most items coded, with most values greater than 0.8 or 80% agreement. Three items resulted in a moderate level of agreement (e.g., Kappa = .41-.60; Landis & Koch, 1977) – status of delinquency case (arrested, charged, pretrial/detained, adjudicated/sentenced, pre-disposition, mixed, unknown; Kappa = .47), type of study (retrospective, prospective, was not explicitly stated; Kappa = .41), and mean risk score for total sample (Kappa = .43). Status of delinquency case and type of study were often not clearly described in the

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<sup>8</sup> The original intention was to code for different recidivism types, however there was insufficient studies and/or reporting on the different types of recidivism to allow for coding at this level.

<sup>9</sup> Absolute agreement two-way mixed ICC was used because systematic differences between the raters was relevant (Hallgren, 2012).

studies. Additionally, there may have been too many categories that could perhaps be streamlined and more clearly defined for increased reliability. Items with unacceptable interrater reliability (less than moderate as defined above) were not included in any further analyses. Mean total risk score for all youth was reported in a total of 4 studies and associated with 52 effect sizes. The discrepancy in ratings reported by the two coders (and thus impacting the interrater reliability value) was a difference of 0.02 for this variable for 22 effect sizes and considered non-significant. Results for interrater reliability by variable are provided in Appendix B.

### **Analytic Strategy**

**Software.** All data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS) version 24. Syntax files developed by Helmus and Babchishin (2011) were adapted for the current study and were used to calculate all required variables to conduct the meta-analysis.

**Random effects models vs. fixed effects.** There are two different models that can be reported from the calculated results of a meta-analysis, random and fixed effects models. A priori decisions should guide the researcher as to which model will be reported (Borenstein et al., 2009). Specifically, to report on a fixed effects model, the underlying assumption is that there is one common (fixed) effect. Under the fixed effects model, the null hypothesis is stated as follows:  $H_0 = \text{common effect size is } 0$ . Importantly, because the fixed effects assumes there is one true effect, the results are not generalizable to other populations because to meet the assumption that there is one true effect, all of the studies are required to be functionally identical (i.e., studies are drawn from the same pool of studies). Thus, the goal is to find the effect in the population from where the studies are

drawn and not to generalize to other populations (Borenstein et al., 2009). Further, Borenstein et al. (2009) state that in practice this situation is relatively rare. Others however report the results of both the fixed effects model and the random effects model, to examine consistency in the results (Babchishin & Helmus, 2013b), as the fixed effects is a more conservative model with more narrow confidence intervals (Borenstein et al., 2009). The null hypothesis under the random effects model is:  $H_0 = \text{mean effect is } 0$ . That is, the random effects model provides a mean estimate of all relevant true effects. The assumption underlying this model is that studies are being sampled from a distribution of effect sizes and thus an average estimate of the true effect is calculated by the random effects model. Because the studies are sampled from a distribution of studies, which are not functionally equivalent, results from the random effects model can be generalized to other populations (Borenstein et al., 2009).

Based on the underlying assumption that studies are being drawn from a population of studies and the goal of this study is to generalize to other populations, the a priori decision was to calculate the average estimate of the true effect and therefore report on the results of the random effects model. The fixed effects model was also calculated as an additional check in on the consistency of the findings between the two models, to increase confidence in the results of the random effects model (Babchishin & Helmus, 2013b).

**Cohen's  $d$  and conversion.** The decision was made to calculate Cohen's  $d$  as the effect size measure due to the common availability of required information reported in research studies (e.g., means and standard deviations). Conversions for the data as reported in the included studies are as follows.

**2x2 contingency tables.** Effect sizes were calculated from 2x2 contingency tables based on the following conversion formulas for effect size ( $d$ ) and variance from Sánchez-Meca, Marín-Martínez and Chácon-Moscoso (2003).

$$d = \frac{1}{1.65} \left[ \ln \left( \frac{\{b + .5\}\{c + .5\}}{\{a + .5\}\{d + .5\}} \right) \right]$$

Where a, b, c, d represent the four cells of the contingency table.

$$\text{Variance of } d = .3673 \left( \frac{1}{a + .5} + \frac{1}{b + .5} + \frac{1}{c + .5} + \frac{1}{d + .5} \right) \quad \frac{1}{(1.65)^2} \cong .3673$$

**Means (M) and standard deviations (SD).** From Cohen (1988), and Hasselblad and Hedges (1995), conversion formulas to calculate  $d$  and variance for effect sizes from means and standard deviations are as follows:

$$d = \frac{(M_1 - M_2)}{S_w} \quad \text{Variance of } d = \left[ \frac{N_1 + N_2}{N_1 N_2} + \frac{d^2}{2(N_1 + N_2)} \right]$$

$$S_w \text{ is the pooled within standard deviation. } S_w = \sqrt{\frac{(N_1 - 1)(SD_1)^2 + (N_2 - 1)(SD_2)^2}{N_1 - 1 + N_2 - 1}}$$

**t tests/F tests.** Conversions for effect sizes reported as t or F included the following formulas provided from Rosenthal (1991):

$$d = t \sqrt{\frac{1}{N_1} + \frac{1}{N_2}} \quad \text{Variance of } d = \left[ \frac{N_1 + N_2}{N_1 N_2} + \frac{d^2}{2(N_1 + N_2)} \right]$$

Note:  $t^2 = F$ , for  $df = 1$ .

**$\chi^2$ .** The formula for the chi-square conversion to  $d$ , again based on Rosenthal (1991) was calculated by the given formulas:

Source: substituting definition of  $r(\phi)$  from Rosenthal's (1991)

$$\text{Compute } r(\phi) = \sqrt{\frac{\chi^2}{N}}$$

Then fill in the blanks:

$$d = \frac{(N_1 + N_2)r}{\sqrt{N_1 N_2 (1 - r^2)}} \text{ and re-arranging.}$$

*r, phi.* The following formulas from Cohen (1988) were used to calculate  $d$  from correlations reported in studies:

$$d = \frac{(N_1 + N_2)r}{\sqrt{N_1 N_2 (1 - r^2)}} \quad \text{Variance of } d = \left[ \frac{N_1 + N_2}{N_1 N_2} + \frac{d^2}{2(N_1 + N_2)} \right]$$

**ROC curves.** Of the effect sizes that were presented as *ROC* curves, conversions were made using the formulas for  $d$  and variance provided by Swets (1986) and Rice and Harris (2005):

$$d = \sqrt{2}Z(AUC), \quad \text{where } \sqrt{2} \equiv 1.4142 \text{ and } Z(AUC) \text{ is the area under the ROC curve expressed as } Z \text{ units.}$$

**File drawer/publication bias.** A common criticism of meta-analysis is the inclusion of published vs. unpublished research studies. The concern is that published studies reflect significant and higher effect sizes than unpublished work and as a result overestimate the true effect size (Borenstein et al., 2009). The goal of a comprehensive search strategy is to uncover as many sources of unpublished studies as possible through grey literature searches, government websites, and direct contact with key authors as subject matter experts. An estimate of this bias can be measured in meta-analysis through moderator analysis and to some extent through calculations such as Orwin's Fail Safe  $N$  (Orwin, 1983).

Computationally, the fail-safe  $N$  is calculated as follows:

$$N_{fs} = \frac{N_0 (d_0 - d_c)}{d_c}$$

where  $N_0$  is the number of studies that contributed to  $d_0$  (the average effect) and  $d_c$  is the critical value (to be specified by the user). Using this calculation, the researcher can specify an effect size they deem important and then determine how many hidden studies it would take to bring the overall effect below that point (Borenstein et al., 2009). For this study, the decision was made to use .05 as the critical value, which represents a non-significant effect based on Cohen's heuristics (1969), thus Orwin's fail-safe  $N$  calculated using the critical value of .05 generates the number of studies needed to bring the overall effect below .05.

## Results

### Included Studies

The general characteristics of the studies and participant samples are presented in Table 3. A total of 22 studies were coded to obtain 584 effect sizes. The coded studies represented a total of 50,601 justice-involved youth (11,952 females and 38,649 males). Just over half of the studies were conducted in the United States (54.5%), with the next largest number of studies being conducted in Canada (27.3%). The majority (68.2%) of included studies were published in peer-reviewed journals or available through government websites. Most youth included in the meta-analysis were community-based (as opposed to a custodial setting). Eight (36.4%) of the 22 studies reported on predictors from the Youth Level of Service/Case Management Inventory (YLS/CMI; Hoge & Andrews, 2011) or an adapted version of this scale. Risk level by gender from each of the

reported scales was missing for just under half of the studies (45.5%). Where risk level information was reported, the samples were mostly comprised of moderate risk offenders. Finally, the average length of follow-up for recidivism was 36.2 months ( $SD = 36.3$ ) and ranged from 6 to 144 months.

Table 3

*Characteristics of Studies and Participants Included in the Meta-Analysis*

| Descriptor Variable  | %    | (n)  |
|--|------|------|
| <b>Country</b>   |      |      |
| Canada   | 27.3 | (6)  |
| United States  | 54.5 | (12) |
| Netherlands (Holland)                                      | 4.5  | (1)  |
| Australia  | 4.5  | (1)  |
| Singapore  | 4.5  | (1)  |
| Spain  | 4.5  | (1)  |
| <b>Location</b>  |      |      |
| Community  | 72.7 | (16) |
| Custody  | 4.5  | (1)  |
| Mixed  | 22.7 | (5)  |
| <b>Published</b>   |      |      |
| No   | 31.8 | (7)  |
| Yes  | 68.2 | (15) |
| <b>Assessment scale</b>                                    |      |      |
| Youth Level of Service/Case Management Inventory (YLS/CMI) | 36.3 | (8)  |
| Washington State Juvenile Court Assessment (WSJCA)         | 13.6 | (3)  |
| Structured Assessment of Violence Risk in Youth (SAVRY)    | 9.1  | (2)  |
| Youth Assessment and Screening Instrument (YASI)           | 9.1  | (2)  |
| Positive Achievement Change Tool (PACT)                    | 4.5  | (1)  |
| San Diego Risk and Resiliency Check-up (SDRRC)             | 4.5  | (1)  |
| Psychopathy Checklist: Youth Version (PCL:YV)              | 4.5  | (1)  |

| Descriptor Variable                         | %    | (n)    |
|---|------|--------|
| Local Risk Assessment (SBARA)               | 4.5  | (1)    |
| Violence Risk Scale: Youth Version (VRS:YV) | 4.5  | (1)    |
| <i>No scale</i>                             | 9.1  | (2)    |
| Risk Level – Females                        |      |        |
| Low   | 9.1  | (2)    |
| Moderate                                    | 36.4 | (8)    |
| High  | 9.2  | (2)    |
| <i>Missing</i>                              | 45.4 | (10)   |
| Risk Level – Males                          |      |        |
| Low   | 4.5  | (1)    |
| Moderate                                    | 31.8 | (7)    |
| High  | 18.2 | (4)    |
| <i>Missing</i>                              | 45.5 | (10)   |
| Risk Level – All                            |      |        |
| Low   | 9.1  | (2)    |
| Moderate                                    | 40.9 | (9)    |
| High  | 13.6 | (3)    |
| <i>Missing</i>                              | 36.4 | (8)    |
| Recidivism Follow-up                        |      |        |
| Fixed                                       | 45.5 | (10)   |
| Variable                                    | 54.5 | (12)   |
| Average length (months)                     | 36.2 | (36.3) |

**Description of individual studies included in the meta-analysis.** A detailed description the individual studies that were included in the meta-analysis is provided in Table 4.

Table 4

*Detailed Description of Included Studies*

| ID | Authors (Year)   | Scale   | Sample   | Country       | ES                           | $N_f$ | $N_m$ | Recidivism Outcome   |
|----|--|---------|--|---------------|------------------------------|-------|-------|--|
| 1  | Anderson, Davidson, Barnes, Campbell, Petersen, & Onifade (2016) | YLS/CMI | Youth in juvenile & family court system        | United States | $AUC$                        | 453   | 1267  | Formally filed charge within two years (GENERAL)                                   |
| 2  | Baglivio & Jackowski (2013)                                      | PACT    | Juveniles who completed probation supervision  | United States | $AUC$                        | 3819  | 11253 | Subsequent juvenile referral or adult arrest within 1 year (GENERAL)               |
| 3  | Chu, Lee, Zeng, Yim, Tan, Ang, Chin, & Ruby (2015)               | YLS/CMI | Convicted youth referred to Probation Services | Singapore     | $r$ ,<br>$AUC$ ,<br>$\chi^2$ | 313   | 2951  | Any conviction following initial court order or breaches of court orders (GENERAL) |

| ID | Authors (Year)                                       | Scale   | Sample  | Country       | ES         | $N_f$ | $N_m$ | Recidivism Outcome                                   |
|----|--|---|---|---------------|------------|-------|-------|--|
| 4  | Colman, Kim, Mitchell-Herzfeld, & Shady (2008)       | Offence history, individual fxning, child malx, child welfare, family env't | Delinquent boys and girls released from juvenile correctional facilities/programs | United States | Means, 2X2 | 499   | 500   | Arrest (and perpetrator of maltreatment) (GENERAL)   |
| 5  | Conrad, Tolou-Shams, Rizzo, Placella, & Brown (2014) | Substance, extern. disorder, criminal hx                                    | Juvenile offenders court-order for a forensic mental health evaluation            | United States | 2x2        | 162   | 240   | New arrest within 12 month follow up (GENERAL)       |
| 6  | Flores, Travis, & Latessa (2004)                     | YLS/CMI & <i>strengths</i>  | Youth sentenced to probation, juvenile rehabilitation, or custody                 | United States | <i>r</i>   | 358   | 1321  | Technical violations; re-arrest (TECHNICAL, GENERAL) |

| ID | Authors (Year)                               | Scale           | Sample   | Country       | ES         | $N_f$ | $N_m$ | Recidivism Outcome  |
|----|--|-----------------|--|---------------|------------|-------|-------|---|
| 7  | Sharkey, Furlong, Jimerson, & O'Brien (2003) | SBARA           | Juvenile youth from a delinquency prevention project in Santa Barbara County | United States | 2x2        | 53    | 106   | Violent offenses, property offenses, drug offense, and all other felonies were counted as re-offenses, within a 2 year follow up following program intake (GENERAL) |
| 9  | McKinnon (2004)                              | PCL:YV, YLS/CMI | Phase I young offenders  | Canada        | <i>AUC</i> | 38    | 64    | (GENERAL, VIOLENT)  |
| 10 | Stockdale, Olver, & Wong (2014)              | VRS-YV          | Adjudicated and sentenced young offenders in Saskatchewan                    | Canada        | <i>AUC</i> | 71    | 76    | Any conviction following youth's first release from custody OR following assessment at the community facility - conviction for a new offense (GENERAL)              |

| ID | Authors (Year) | Scale                   | Sample  | Country       | ES         | $N_f$ | $N_m$ | Recidivism Outcome   |
|----|----------------|-------------------------|---|---------------|------------|-------|-------|--|
| 11 | Onifade (2008) | YLS/CMI                 | Youth entering the justice system and youth under jurisdiction of the court   | United States | <i>AUC</i> | 274   | 694   | Any new criminal petitions up to 24 months following administration of the YLS/CMI; not tickets and truancy violations (GENERAL) |
| 12 | Quinn (2014)   | YASI & <i>strengths</i> | Probation involved youth, aged 12-17 with one completed YASI Full Assessment from 2001 to 2003                      | United States | <i>2X2</i> | 653   | 5178  | A new finding of delinquency (guilt from a trial or youth self-admission) while youth is on probation or supervision (GENERAL)   |
| 13 | Rowe (2002)    | YLS/CMI                 | Male and female young offenders with custody, detention, or probation orders or high likelihood of receiving orders | Canada        | <i>r</i>   | 81    | 327   | Future juvenile court infractions and adult criminal convictions (GENERAL, VIOLENT)  |

| ID | Authors (Year)                                     | Scale                                     | Sample  | Country   | ES         | $N_f$ | $N_m$ | Recidivism Outcome  |
|----|--|---|---|-----------|------------|-------|-------|---|
| 14 | Schmidt, Campbell, & Houlding (2011)               | YLS/CMI, PCL:YV, SAVRY                    | Adolescents referred to court clinic to assist in youth court disposition decision making                                 | Canada    | <i>AUC</i> | 48    | 80    | Official record of recidivism incidents over the follow-up for violent, nonviolent, sexual, and technical offences (GENERAL, VIOLENT, TECHNICAL)  |
| 16 | Shepherd, Luebbers, Ogloff, Fullam, & Dolan (2014) | SAVRY, YLS/CMI, PCL:YV & <i>strengths</i> | Male and female youth remanded or sentenced by Victoria court to Youth Justice Precinct or youth justice centre (custody) | Australia | <i>AUC</i> | 38    | 175   | General (any future incident that resulted in police charge) and violent (transgression that led to new charge) - does not include technical breaches of orders and parole (GENERAL, VIOLENT) |

| ID | Authors (Year)                 | Scale   | Sample   | Country       | ES       | $N_f$ | $N_m$ | Recidivism Outcome   |
|----|--------------------------------|---|--|---------------|----------|-------|-------|--|
| 17 | Turner, Fain, & Sehgal (2005)  | Domains of the San Diego Risk and Resiliency Checkup (SDRRC) & <i>strengths</i> | Court (District Attorney responsible, pre-plea) and non-court (more minor offenses) youth in Los Angeles assessed on the SDRRC | United States | $r$      | 213   | 823   | Arrests within 12 months after assessment and include both juvenile and adult arrests - available recidivism data available for 1036/1165 (GENERAL)  |
| 18 | Valdez (2002)                  | Family ( <i>strength</i> ) and overall risk                                     | Youth on probation   | United States | $\chi^2$ | 50    | 50    | GENERAL  |
| 19 | van der Put & de Ruiter (2016) | Washington State Juvenile Court Assessment (WSJCA)                              | Convicted American juvenile offenders  | United States | $r$      | 3502  | 10111 | General (one or more convictions for any offence within 18 months of assessment) and violent recidivism (one or more new convictions for violent felony offence within 18 months of assessment) (GENERAL, VIOLENT) |

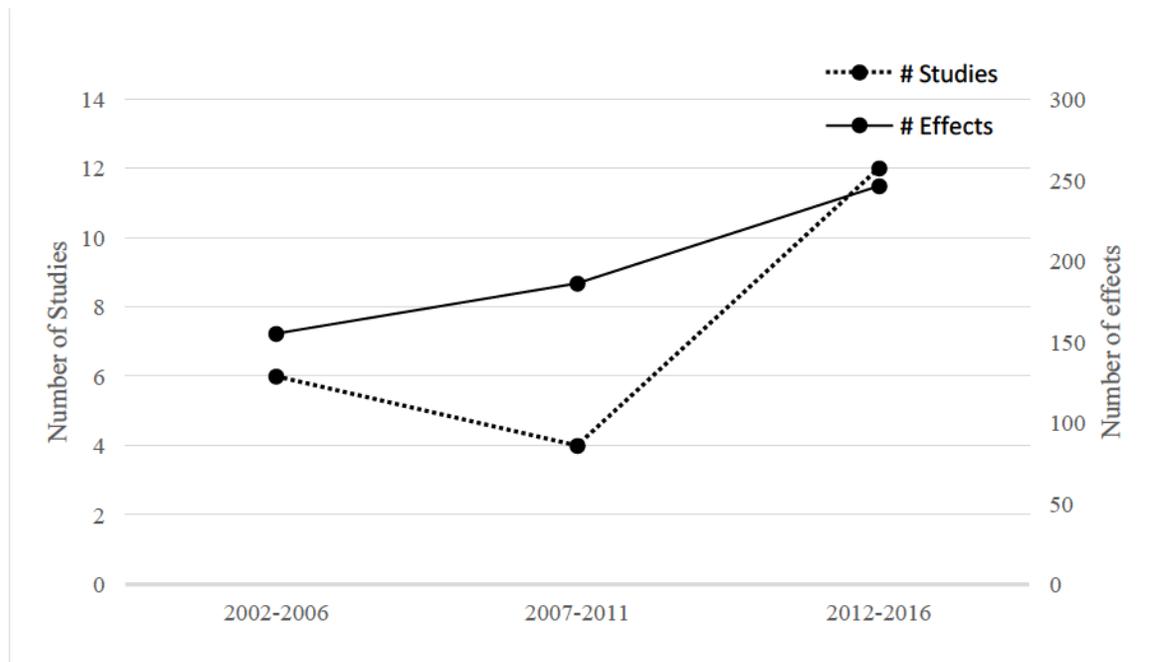
| ID | Authors (Year)  | Scale   | Sample   | Country               | ES          | $N_f$ | $N_m$ | Recidivism Outcome   |
|----|---|---|--|-----------------------|-------------|-------|-------|--|
| 20 | van der Put, Deković, Hoeve, Stams, van der Laan, & Langewouters (2014) | Washington State Juvenile Court Assessment (WSJCA) & Basisraadsonderzoek (BARO) | Adolescents who have committed a criminal offense and have been referred to Council of Child Care and Protection who provides advice on what penalty to impose | Netherlands (Holland) | $r, \chi^2$ | 240   | 1156  | Occurrence of one or more new judicial contact within 2 years (GENERAL)  |
| 21 | Taylor (2009)   | YLS/CMI   | All probation cases referred (not necessarily adjudicated but will be under supervision of juvenile court for period of time (i.e., probation investigation)   | United States         | $r$         | 318   | 424   | Arrest, adjudication, institutional commitment and probation violation dichotomously coded with variable follow up - to be coded includes arrest and probation violation as technical (GENERAL, TECHNICAL) |

| ID | Authors (Year)                        | Scale                   | Sample   | Country | ES       | $N_f$ | $N_m$ | Recidivism Outcome   |
|----|---------------------------------------|-------------------------|--|---------|----------|-------|-------|--|
| 22 | Jones, Brown, Robinson, & Frey (2016) | YASI & <i>strengths</i> | Youth under community supervision with Alberta Justice and Solicitor for whom recidivism was available for 18 months           | Canada  | <i>r</i> | 114   | 350   | New charges resulting in re-contact with correctional services (GENERAL) |
| 23 | Cuervo & Villanueva (2014)            | YLS/CMI Spanish Version | All juveniles with a disciplinary record in Juvenile Court of a Spanish province from March 2008 to December 2010; post charge | Spain   | <i>t</i> | 162   | 48    | Subsequent charges in the 2-year period following index charge (GENERAL) |

| ID | Authors (Year)                                 | Scale   | Sample   | Country | ES  | $N_f$ | $N_m$ | Recidivism Outcome   |
|----|--|---------|--|---------|-----|-------|-------|--|
| 24 | Vitopoulos, Peterson-Badali, & Skilling (2012) | YLS/CMI | Male and female youth referred for court ordered assessment to mental health agency; mix of custodial and community sample (Convicted) | Canada  | 2x2 | 37    | 39    | One or more new offences within approximately 3 years following conviction (GENERAL) |

*Note.* ID = study ID. YLS/CMI= Youth Level of Service/Case Management Inventory; WSJCA = Washington State Juvenile Court Assessment (WSJCA); SAVRY = Structured Assessment of Violence Risk in Youth; YASI = Youth Assessment and Screening Instrument; PACT= Positive Achievement Change Tool; SDRRC = San Diego Risk and Resiliency Check-up; PCL:YV = Psychopathy Checklist: Youth Version (PCL:YV); SBARA = Local Risk Assessment; VRS:YV = Violence Risk Scale: Youth Version. ES = Effect Size.  $N_f$  = number of females;  $N_m$  = number of males.

**Effect sizes by year of publication.** Through comprehensive data searching, studies identified as ‘hits’ ranged in date from 1909 through to 2016. Once the screening process was complete, a total of 22 studies, conducted from 2002 to 2016 remained to be included for meta-analysis. The number of effect sizes and number of studies by year of publication is provided in Figure 2.



*Figure 2.* Number of effect sizes and number of included studies by year of publication

### Organization of Meta-Analytic Results

The tables and figures that follow present the findings for the analysis first at the global domain level, followed by the analysis of individual indicators. For both the global domains and the individual indicators, the results of the females are presented followed by the results for the males. The first research question is concerned with identifying risk factors that are gender neutral, gender salient, or gender specific among justice-involved

youth, at both the level of the domains and at the individual indicator level. The first series of tables include the results for the global risk domains – Tables 5 and 6 present the results for the females and males, respectively, to assist in answering questions of gender neutrality (i.e., factors equally predictive for both males and females) and gender specificity (i.e., factors significant for one gender and not the other). Table 7 contains the meta-analysis on the difference scores of effect sizes between females and males to answer the question of gender saliency (i.e., whether factors are predictive for both genders but the difference in effect size is greater for one gender over the other); the meta-analysis of differences scores presented in Table 7 tests whether the difference is significantly different than 0 to provide evidence for the factors as gender salient. Similarly, Tables 8 and 9 present the findings for the individual risk indicators and general recidivism, for females and males respectively. Tables 8 and 9 will assist in answering the question of gender neutrality and gender specificity at the indicator level, whereas Table 10 presents the difference scores in the effect sizes between females and males on the individual indicators to address the question of gender saliency.

The second research question focussed on gender neutrality, gender saliency, and gender specificity in strength factors at the domain level. The results for the identified strength factors are presented in the same sequence as the risk factors. Specifically, Table 12 provides the meta-analysis of the strength predictors among females and Table 13 presents the strength predictors among the males. Table 14 follows with the effect size difference scores between females and males to answer the question of gender saliency for the strength predictors. There was insufficient detail at the level of the indicators to conduct further analysis on strength factors beyond the domain level.

The results conclude with a consideration of moderator analysis of domain level risk factors and publication bias. Table 16 provides the breakdown of the moderator analysis for the domain level risk factors for females and publication bias and Table 17 presents the results for the males. Moderator analyses were only conducted for the global risk domains with sufficient studies contributing to the overall effect sizes (i.e., a minimum of six studies<sup>10</sup>). The only variable included for moderator analysis was publication bias as there was insufficient or unreliable data for other planned moderators (e.g., type of study, level of risk). Further consideration of publication bias is also examined through calculations for Orwin's fail-safe *N* to conclude the results.

#### **Determinations of Gender Neutrality, Gender Saliency, and Gender Specificity**

**Gender neutral.** When risk or strength factors emerged as significantly predictive for both males and females – that is, confidence intervals did not contain zero in Tables 5 and 6 (global risk domains), Tables 8 and 9 (individual risk indicators) and Tables 12 and 13 (global strength domains) and the meta-analysis of the effect size differences scores were not significant. Specifically, the effect size contained zero in Table 7 (global risk domains difference scores), Table 10 (individual risk indicators difference scores), and Table 14 (global strength domains difference scores) factors were identified as gender neutral; that is, they are equally predictive for both males and females.

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<sup>10</sup> According to Borenstein et al. (2009), there are no established rules on the minimum number of studies to conduct moderator analysis, however the ratio of studies to moderators should be considered. A minimum of at least six studies for the effect was chosen to ensure that there were at least three studies at each level of the moderator to calculate an average effect for each level.

**Gender salient.** If the factors from Tables 5 and 6 (global risk domains) and Tables 8 and 9 (individual risk indicators), and Tables 12 and 13 (global strength domains) are significant (confidence intervals do not contain zero) for both males and females and the effect size difference scores in Tables 7, 10, and 14 are significant (confidence intervals do not contain zero) then factors were determined to be gender salient (i.e., predictive for both genders but significantly larger in magnitude for one gender over the other).

**Gender specific.** Factors that emerged in Tables 5 and 6, 8 and 9, and 12 and 13 that were significant for either males or females (confidence interval does not contain zero) were identified as gender specific (i.e., they are predictive for one gender and not the other). The difference in the magnitude of the effect size for the individual risk indicators are demonstrated in Figures 3 and 4<sup>11</sup>.

**Nil effect.** If the effect size  $d$  is less than .10 (a nil effect by Cohen's standards) then the factor (global domain or individual indicator) is determined a non-significant predictor of recidivism (or success, for strengths). Also, if the Cohen's  $d$  difference score is less than .10 then the difference would be considered a nil effect and the risk or strength factor could be considered gender neutral if the effect was determined to be predicting equally well for both genders.

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<sup>11</sup> As will be seen, there were no significant differences that emerged between males and females at the global domain level to indicate gender specificity, thus figures were not generated for the differences in the effects at the domain level.

### **Meta-Analysis of Domain Level Risk Factors and Recidivism: Evidence of Gender Neutrality, Gender Specificity, or Gender Saliency at the Global Level?**

It was hypothesized that the majority of the global risk domains would be equally predictive for both males and females (i.e., gender neutral). Specifically, it was expected that the domains of criminal history, antisocial peer relations, problematic family circumstances and parenting, education/school concerns, education/employment problems, antisocial personality, poor use of leisure/recreation time, antisocial attitudes/orientation) would be equally predictive for both males and females. To answer the first research question regarding which hypothesized domain level risk factors predict recidivism among justice-involved youth, the first set of meta-analyses calculated the average effect for risk factors at the global domain level. The hypothesis for gender neutrality for global risk factors at the domain level was mostly supported. From the random effects presented in Table 5 (global risk domains for females), Table 6 (global risk domains for males) and Table 7 (effect size difference scores between females and males), the global risk domains (antisocial peer relations, problematic family circumstances and parenting, education/school concerns, education/employment problems, antisocial peer relations, antisocial attitudes/orientation, substance abuse) were equally predictive for both males and females, with effects in the small ( $.10 < d < .29$ ) to moderate range ( $.30 < d < .49$ ) with none of the confidence intervals containing zero. The exceptions were the criminal history and poor use of leisure time domains. As can be seen, the random effects model reported a small effect for criminal history for the females ( $d = .16$ ), though the 95% confidence interval contained zero ( $-.07, .38$ ). Notably, this finding is not consistent with the more conservative, fixed effects model that reports a

corresponding  $d$  of .29 (95%  $CI = .23, .35$ ).

There a couple of things to consider. First, the value of  $Q$  is significant, which suggests that the random effects model is defensible (i.e., that there is significant variability in the effects; Higgins, Thompson, Deeks, & Altman, 2003). The assumption of the random effects model is that there is not one true effect, rather the random effects model is testing that there is a distribution of effects, thus validating variability in the effect sizes. The large amount of variability in the effect for criminal history for females is suggestive that the random effects model is appropriate and interpretation should be based on the random effects model, not the fixed effects model which indicates criminal history is not significantly predictive for females. Overall, this finding suggests that at the global domain level for risk factors, criminal history is a gender specific domain (i.e., predictive of recidivism for males but not females). The other domain that emerged as gender specific for the global risk domains in Tables 5 and 6 is the poor use of leisure time domain, which only emerged as predictive for males. Thus, criminal history and poor use of leisure recreation time were hypothesized to be gender neutral; however the two domains emerged as gender specific for males. There were no global risk factors that emerged as specific for females at the domain level.

From Tables 5 and 6, it appears as though the antisocial peer relations, problematic family circumstances and parenting, education/school concerns, education/employment problems, antisocial personality, antisocial attitudes/orientation domains are gender neutral (equally predictive for both males and females) as concluded above. The results were confirmed by meta-analyzing the difference scores for the effect sizes between males and females and tested to determine if the difference scores were

significantly different than zero. When the effect size difference scores were determined to be significantly different than zero, this indicated that a factor should be considered gender salient, as the magnitude of the effect is larger for one gender over the other.

To measure whether there was a significant difference in the magnitude of an effect between gender, a Cohen's *d* difference score was calculated and then meta-analyzed to test whether this difference is significantly different than zero (i.e., 95% *CI* does not contain 0).

$$ESd_f - ESd_m = ES_{diff}$$

For this study, the difference score was calculated by subtracting the mean effect for the males from the mean effect for the females, thus positive *d* difference values indicate that the magnitude was stronger for females and negative *d* difference values indicate that the magnitude was stronger for males. Table 7 presents the results of the meta-analysis of the Cohen's *d* difference scores for the global risk domains.

Contrary to the stated hypotheses, the effect size difference scores between females and males for the substance abuse, mental health, and child abuse domains were not significantly different. Based on past meta-analytic reviews, evidence from primary studies, and theoretical accounts, it was expected that the substance abuse, mental health, and child abuse domains would be salient factors in the prediction of recidivism for females. Considering the results for the global risk domains in Tables 5 and 6, mental health, and child abuse did not emerge as significant predictors for either males or females. Similarly, in Table 7 the difference scores between the effects for females and males were also not significant. At the level of the individual indicators however, child maltreatment and physical abuse did emerge as significant (albeit small effects,  $d < .30$ )

for both males and females (Cohen's  $d$  difference score was not significantly different – confidence interval contained zero). Finally, it was hypothesized that the substance abuse global risk domain would emerge as a significant predictor for both males and females; however the magnitude of the effect would be larger for females (i.e., gender salient). The results of Tables 5 and 6 demonstrate that substance abuse as a global risk factors was equally predictive for both males and females and Table 7 that presents the results of the test of the differences scores between females and males indicates that substance abuse was not significantly a better predictor for either gender; that is, substance abuse was equally predictive of recidivism for both males and females, though the effects for both were considered small.

To summarize, the results of the meta-analyses conducted on the global domain risk factors provide evidence that antisocial peer relations, education/employment problems, problematic family circumstances and parenting, antisocial personality, antisocial attitudes, and substance abuse are gender neutral (i.e., equally predictive for both males and females) global risk factors, consistent with previous research (Bonta & Andrews, 2017; Cottle et al., 2001; Green, 2006; Hubbard & Pratt, 2002; Schwalbe, 2008; Smith et al., 2009; Olver et al., 2014; Simourd & Andrews, 1994). Contrary to the hypothesis, substance abuse did not emerge as a salient factor for females (i.e., predictive for both males and females but a stronger effect for females); substance abuse was determined to a gender neutral global risk factor. As well, criminal history and poor use of leisure time were determined to be gender specific for males, as the two domains were not significantly predictive for females. It was expected that criminal history and poor use of leisure time would also emerge as gender neutral based on previous research that has

demonstrated the significance of the two domains with both males and females (Cottle et al., 2001; Olver et al., 2014). Lastly, although the global domains of mental health and child abuse did not emerge as significantly predictive, the individual indicators for maltreatment/neglect and physical abuse were significant with small effects for both males and females, and the difference score was not significantly different indicating the maltreatment/neglect and physical abuse are gender neutral predictors of recidivism.

Table 5

*Meta-Analysis of Risk Predictors of General Recidivism for Female Offender Youth at the Domain Level*

| Global risk domain                           | Fixed Effects |              | Random Effects |               | $Q$      | $I^2$ | $N$  | $k$ | Study ID   |
|--|---------------|--------------|----------------|---------------|----------|-------|------|-----|--|
|  | $d$           | 95% CI       | $d$            | 95%CI         |          |       |      |     |  |
| Criminal history                             | 0.29          | [0.23, 0.35] | 0.16           | [-0.07, 0.38] | 55.19*** | 85.50 | 5475 | 9   | 1, 2, 11 <sup>a</sup> , 13,14, 17, 21, 23              |
| Problematic family circumstances & parenting | 0.22          | [0.18, 0.27] | 0.29           | [ 0.16, 0.43] | 50.36*** | 78.16 | 9327 | 12  | 1, 2, 3, 11, 13, 14, 17, 19, 21, 23, 24                |
| Education/school concerns                    | 0.19          | [0.14, 0.24] | 0.09           | [-0.08, 0.26] | 35.45*** | 85.89 | 8319 | 6   | 1, 2, 17, 19, 20, 24                                   |
| <i>outlier removed</i>                       | 0.21          | [0.16, 0.26] | 0.20           | [ 0.12, 0.29] | 7.48     | 46.56 | 8051 | 5   | 1, 2, 19, 20, 24                                       |
| Education/employment problems                | 0.50          | [0.38, 0.62] | 0.52           | [ 0.36, 0.69] | 10.78    | 35.04 | 1285 | 8   | 3, 1, 13, 14, 21, 23 24                                |
| Antisocial peer relations                    | 0.25          | [0.20, 0.31] | 0.27           | [ 0.10, 0.45] | 57.12*** | 80.74 | 5748 | 12  | 1, 3, 11, 13, 14, 17, 19, 20, 21, 23, 24               |
| Substance abuse                              | 0.06          | [0.02, 0.11] | 0.10           | [ 0.02, 0.18] | 25.25    | 40.59 | 9877 | 16  | 1, 2, 3, 5, 11, 13, 14, 16, 17, 19, 20, 21, 22, 23, 24 |
| Poor use leisure/recreation                  | 0.16          | [0.06, 0.25] | 0.20           | [ 0.01, 0.39] | 29.86*** | 69.86 | 1978 | 10  | 1, 3, 11, 13, 14, 20, 21, 23, 24                       |

| Global risk domain                 | Fixed Effects |              | Random Effects |               | $Q$      | $I^2$ | $N$  | $k$ | Study ID                                  |
|------------------------------------|---------------|--------------|----------------|---------------|----------|-------|------|-----|---|
|                                    | $d$           | 95% CI       | $d$            | 95%CI         |          |       |      |     |   |
| <i>outlier removed</i>             | 0.11          | [0.01, 0.21] | 0.11           | [ 0.00, 0.23] | 9.75     | 17.92 | 1897 | 9   | 1, 3, 11, 14, 20, 21, 23, 24              |
| Antisocial personality/behaviour   | 0.40          | [0.29, 0.51] | 0.42           | [ 0.23, 0.61] | 16.05    | 56.39 | 1528 | 8   | 1, 3, 11,13, 14, 23, 24                   |
| Antisocial attitudes/orientation   | 0.25          | [0.21, 0.30] | 0.29           | [ 0.17, 0.41] | 35.78*** | 69.25 | 9093 | 12  | 1, 2, 3, 11, 11, 13, 14, 16, 19, 21, 24   |
| Mental health                      | 0.08          | [0.04, 0.13] | 0.08           | [ 0.04, 0.13] | 2.82     | 0.00  | 8174 | 5   | 2, 4, 19, 20, 22                          |
| Child abuse (all types)            | 0.21          | [0.00, 0.42] | 0.20           | [-0.06, 0.47] | 3.87     | 22.39 | 1320 | 4   | 3, 12, 20, 22                             |
| <i>Risk assessment instruments</i> |               |              |                |               |          |       |      |     |   |
| YLS/CMI total score                | 0.56          | [0.47, 0.66] | 0.62           | [0.42, 0.81]  | 35.05*** | 68.62 | 2038 | 12  | 1, 3, 6, 8, 9, 11, 13, 14, 16, 21, 23, 24 |
| PCL:YV total score                 | 0.91          | [0.60, 1.22] | 0.85           | [0.27, 1.43]  | 9.14*    | 67.18 | 201  | 4   | 9, 13, 14, 16                             |

*Note.* Positive  $d$  values indicate the effect size is larger among the recidivists compared with the non-recidivists. YLS/CMI = Youth Level of Service Case Management Inventory; PCL:YV = Hare Psychopathy Checklist: Youth Version.  $d$  = Cohen's  $d$  measure of effect size.  $Q$  = Cochran's  $Q$  to measure variability across studies.  $I^2$  = measures the effect size for the variability in  $Q$  - heuristics for interpretation of  $I^2$  variability – 25% (low), 50% (moderate), and 75% (high).  $N$  = number of participants in the analysis.  $k$  = number of studies in the analysis. *Outlier(s) removed* = outliers were removed if they met all 3 of the following criteria: 1. Most extreme value (positive or negative), 2. Accounted for more than 50% of the variance in the effect size, 3. Overall  $Q$  was significant. \*Study ID = 11 had sample aggregated by ethnicity and was entered into analyses twice with non-overlapping samples, thus number of entries under Study ID will not equal  $k$  in those instances. \*  $p < .05$ , \*\*  $p < 0.01$ , \*\*\*  $p < .001$

Table 6

*Meta-Analysis of Risk Predictors of General Recidivism for Male Offender Youth at the Domain Level*

| Global risk domain                           | Fixed Effects |              | Random Effects |               | $Q$       | $I^2$ | $N$   | $k$ | Study ID                                 |
|--|---------------|--------------|----------------|---------------|-----------|-------|-------|-----|--|
|  | $d$           | 95% CI       | $d$            | 95%CI         |           |       |       |     |  |
| Criminal history                             | 0.32          | [0.29, 0.35] | 0.20           | [ 0.01, 0.39] | 123.24*** | 93.51 | 15537 | 9   | 1, 2, 11, 13,14, 17, 21, 23              |
| Problematic family circumstances & parenting | 0.23          | [0.21, 0.26] | 0.21           | [ 0.09, 0.33] | 157.82*** | 93.03 | 28638 | 12  | 1, 2, 3, 11, 13, 14, 17, 19, 21, 23, 24  |
| Education/school concerns                    | 0.25          | [0.22, 0.27] | 0.14           | [ 0.01, 0.27] | 73.35***  | 93.18 | 24594 | 6   | 1, 2, 17, 19, 20, 24                     |
| <i>outlier removed</i>                       | 0.26          | [0.24, 0.29] | 0.26           | [ 0.22, 0.30] | 7.17      | 44.22 | 23826 | 5   | 1, 2, 19, 20, 24                         |
| Education/employment problems                | 0.42          | [0.36, 0.48] | 0.52           | [ 0.35, 0.69] | 36.57***  | 80.86 | 5239  | 8   | 3, 11, 13, 14, 21, 23, 24                |
| <i>outliers removed</i>                      | 0.40          | [0.34, 0.46] | 0.42           | [ 0.31, 0.52] | 11.91     | 49.63 | 5077  | 7   | 3, 11, 14, 21, 24                        |
| Antisocial peer relations                    | 0.33          | [0.30, 0.36] | 0.32           | [ 0.17, 0.46] | 164.11*** | 93.30 | 18541 | 12  | 1, 3, 11, 13, 14, 17, 19, 20, 21, 23, 24 |
| <i>outliers removed</i>                      | 0.40          | [0.36, 0.43] | 0.41           | [ 0.32, 0.50] | 27.62**   | 67.41 | 14822 | 10  | 1, 11, 13, 14, 19, 20, 21, 23, 24        |

| Global risk domain                   | Fixed Effects |              | Random Effects |               | $Q$      | $I^2$ | $N$   | $k$ | Study ID   |
|--------------------------------------|---------------|--------------|----------------|---------------|----------|-------|-------|-----|--|
|                                      | $d$           | 95% CI       | $d$            | 95%CI         |          |       |       |     |  |
| Substance abuse                      | 0.18          | [0.15, 0.20] | 0.17           | [ 0.10, 0.24] | 84.08*** | 82.16 | 30523 | 16  | 1, 2, 3, 5, 11, 13, 14, 16, 17, 19, 20, 21, 22, 23, 24 |
| Poor use leisure/recreation          | 0.24          | [0.20, 0.29] | 0.33           | [ 0.19, 0.47] | 61.92*** | 85.47 | 7662  | 10  | 1, 3, 11, 13, 14, 20, 21, 23, 24                       |
| Antisocial personality/<br>behaviour | 0.26          | [0.21, 0.31] | 0.37           | [ 0.22, 0.52] | 39.39*** | 82.23 | 6214  | 8   | 1, 3, 11, 13, 14, 23, 24                               |
| Antisocial attitudes/<br>orientation | 0.34          | [0.31, 0.36] | 0.32           | [ 0.25, 0.40] | 53.81*** | 79.56 | 28009 | 12  | 1, 2, 3, 11, 11, 13, 14, 16, 19, 21,23, 24             |
| Mental health                        | 0.05          | [0.02, 0.07] | 0.05           | [ 0.00, 0.09] | 6.27     | 36.25 | 23369 | 5   | 2, 4, 19, 20, 22                                       |
| Child abuse (all types)              | 0.13          | [0.05, 0.20] | 0.01           | [-0.27, 0.29] | 28.37*** | 89.43 | 9635  | 4   | 3, 20, 22, 23  |
| <i>Risk assessment instruments</i>   |               |              |                |               |          |       |       |     |  |
| YLS/CMI total score                  | 0.53          | [0.49, 0.58] | 0.60           | [0.49, 0.71]  | 39.18*** | 71.92 | 7462  | 12  | 1, 3, 6, 8, 9, 11, 13, 14, 16, 21, 23, 24              |
| PCL:YV total score                   | 0.88          | [0.70, 1.06] | 0.94           | [0.63, 1.25]  | 7.31     | 58.96 | 610   | 4   | 9, 13, 14, 16  |

*Note.* Positive  $d$  values indicate the effect size is larger among the recidivists compared with the non-recidivists. YLS/CMI = Youth Level of Service Case Management Inventory; PCL:YV = Hare Psychopathy Checklist: Youth Version.  $d$  = Cohen's  $d$  measure of effect size.  $Q$  = Cochran's  $Q$  to measure variability across studies.  $I^2$  = measures the effect size for the variability in  $Q$  - heuristics for

interpretation of  $I^2$  variability – 25% (low), 50% (moderate), and 75% (high).  $N$  = number of participants in the analysis.  $k$  = number of studies in the analysis. *Outlier(s) removed* = outliers were removed if they met all 3 of the following criteria: 1. Most extreme value (positive or negative), 2. Accounted for more than 50% of the variance in the effect size, 3. Overall  $Q$  was significant. <sup>a</sup> Study ID = 11 had sample aggregated by ethnicity and was entered into analyses twice with non-overlapping samples, thus number of entries under Study ID will not equal  $k$  in those instances. \*  $p < .05$ , \*\*  $p < 0.01$ , \*\*\*  $p < .001$

Table 7

*Meta-Analysis of Difference Scores on Predictors of General Recidivism for Justice-Involved Youth at the Domain Level*

|  | <i>Mean<br/>diff</i> | <i>Median<br/>diff</i> | Fixed Effects |                | Random Effects |               | <i>Q</i> | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | Study ID  |
|--|----------------------|------------------------|---------------|----------------|----------------|---------------|----------|-----------------------|----------|----------|---|
|  |                      |                        | <i>d</i>      | <i>95% CI</i>  | <i>d</i>       | <i>95%CI</i>  |          |                       |          |          |   |
| Criminal history                                   | -0.07                | 0.00                   | -0.02         | [-0.06, 0.03]  | -0.05          | [-0.18, 0.09] | 31.96*** | 74.97                 | 21012    | 9        | 1, 2, 11, 13,14,<br>17, 21, 23                                  |
| Problematic family<br>circumstances &<br>parenting | 0.01                 | 0.10                   | 0.01          | [-0.04, 0.05]  | 0.10           | [-0.06, 0.27] | 88.16*** | 87.52                 | 37965    | 12       | 1, 2, 3, 11, 13,<br>14, 17, 19, 21,<br>23, 24                   |
| Education/school<br>concerns                       | 0.10                 | -0.04                  | -0.06         | [-0.10, -0.01] | -0.07          | [-0.16, 0.02] | 11.71*   | 57.30                 | 32913    | 6        | 1, 2, 17, 19,<br>20, 24   |
| Education/employ.<br>problems                      | 0.07                 | 0.13                   | 0.07          | [-0.07, 0.21]  | 0.07           | [-0.12, 0.26] | 10.20    | 31.38                 | 6524     | 8        | 3, 11, 13, 14,<br>21, 24, 23                                    |
| Antisocial peer<br>relations                       | 0.00                 | -0.06                  | -0.10         | [-0.14, -0.06] | -0.01          | [-0.15, 0.13] | 68.89*** | 84.03                 | 24289    | 12       | 1, 3, 11, 13,<br>14, 17, 19, 20,<br>21, 23, 24                  |
| Substance abuse                                    | -0.04                | -0.08                  | -0.12         | [-0.16, -0.07] | -0.06          | [-0.16, 0.04] | 31.82*   | 52.86                 | 40400    | 16       | 1, 2, 3, 5, 11,<br>13, 14, 16, 17,<br>19, 20, 21, 22,<br>23, 24 |

|                                    | <i>Mean diff</i> | <i>Median diff</i> | Fixed Effects |                | Random Effects |               | <i>Q</i> | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | Study ID                                  |
|------------------------------------|------------------|--------------------|---------------|----------------|----------------|---------------|----------|-----------------------|----------|----------|---|
|                                    |                  |                    | <i>d</i>      | <i>95% CI</i>  | <i>d</i>       | <i>95%CI</i>  |          |                       |          |          |   |
| Poor use leisure/recreation        | -0.17            | -0.10              | -0.09         | [-0.18, 0.01]  | -0.09          | [-0.31, 0.12] | 34.65*** | 74.02                 | 9640     | 10       | 1, 3, 11, 13, 14, 20, 21, 23, 24          |
| Antisocial personality/beh.        | -0.06            | -0.01              | 0.12          | [-0.01, 0.26]  | 0.09           | [-0.17, 0.34] | 18.64*   | 62.45                 | 7742     | 8        | 1, 3, 11, 13, 14, 23, 24,                 |
| Antisocial attitudes/orientation   | -0.04            | -0.12              | -0.09         | [-0.14, -0.04] | -0.03          | [-0.15, 0.09] | 30.63**  | 64.09                 | 37102    | 12       | 1, 2, 3, 11, 13, 14, 16, 19, 21, 23, 24   |
| Mental health                      | 0.06             | 0.03               | 0.04          | [ 0.00, 0.07]  | 0.04           | [ 0.00, 0.07] | 0.88     | 0.00                  | 31543    | 5        | 2, 4, 19, 20, 22                          |
| Child abuse (all types)            | 0.33             | 0.31               | 0.23          | [0.05, 0.41]   | 0.28           | [-0.16, 0.73] | 13.27**  | 77.40                 | 10955    | 4        | 3, 12, 20, 22                             |
| <i>Risk assessment instruments</i> |                  |                    |               |                |                |               |          |                       |          |          |   |
| YLS/CMI total score                | -0.06            | -0.06              | 0.05          | [-0.05, 0.15]  | 0.04           | [-0.15, 0.23] | 28.87**  | 61.90                 | 9500     | 12       | 1, 3, 6, 8, 9, 11, 13, 14, 16, 21, 23, 24 |
| PCL:YV total score                 | -0.15            | -0.10              | 0.02          | [-0.46, 0.51]  | -0.12          | [-0.97, 0.73] | 8.23*    | 63.55                 | 811      | 4        | 9, 13, 14, 16                             |

*Note.* Positive *d* values indicate the effect size is larger for females (*M* females – *M* males). YLS/CMI = Youth Level of Service Case Management Inventory; PCL:YV = Hare Psychopathy Checklist: Youth Version. *d* = Cohen's *d* measure of effect size. *Mean diff* = mean difference in effect size between males and females. *Median diff* = median difference in effect size between males and females. *Q* = Cochran's *Q* to measure variability across studies. *I*<sup>2</sup> = measures the effect size for the variability in *Q*; *N* = number of participants in the

analysis.  $k$  = number of studies in the analysis. <sup>a</sup> Study ID = 11 had sample aggregated by ethnicity and was entered into analyses twice with non-overlapping samples, thus number of entries under Study ID will not equal  $k$  in those instances. \*  $p < .05$ , \*\*  $p < 0.01$ , \*\*\*  $p < .001$

### **Meta-Analysis of Individual Risk Factors and Recidivism: Evidence of Gender Neutrality, Gender Specificity, or Gender Saliency at the Individual Item Level?**

Next, the individual indicators coded from within each of the global risk domains were meta-analyzed to calculate an average effect size for each, conducted separately for females (Table 8) and males (Table 9). Similar to the results for the global risk domains, the effect size difference score for the individual indicators between the females and the males were meta-analyzed to determine if the difference was significantly different than zero to test for gender saliency – the meta-analysis of the difference scores are presented in Table 10.

The primary purpose of the meta-analysis of the individual risk factors was to explore which factors would emerge as gender neutral, gender salient, or gender specific for male and female justice-involved youth. Given the research conducted to date has primarily focussed on the global level of risk factors, there is less available evidence to speak to a priori hypotheses at the level of the individual indicators for males and females. The exception is for three gender responsive items hypothesized to be gender specific for females – the individual indicators of history of running away, out of home placements, and unstable living arrangements (e.g., no permanent address/shelter, kicked out of home) were expected to emerge as female specific (i.e., significantly predictive for females and not significant for males).

Based on the random effects model from Table 8 and 9, the following individual risk indicators emerged as significantly predictive, with small or moderate effects (confidence intervals did not include zero) for both males and females:

- Criminal history: prior convictions or arrests, failure to comply, and prior custody

- Problematic family circumstances/parenting: difficulty controlling behaviour, inappropriate discipline
- Education/school concerns: low academic achievement
- Antisocial personality: poor frustration tolerance
- Antisocial attitudes: defies authority, aggressive attitudes
- Child abuse: physical abuse, childhood maltreatment/neglect
- Other adversity: history of running away

Interestingly, one of the three hypothesized gender specific factors (i.e., predictive for female only), history of running away emerged as a significant predictor for both males and females which does not support the factor as gender specific. To more precisely test the individual indicators as gender neutral (i.e., equally predictive for both males and females) or gender salient (i.e., equally predictive for both but stronger in effect for one gender over the other), the effect size difference score for the indicators was meta-analyzed and the results are reported in Table 10.

Recall that the mean effect for males is subtracted from the mean effect for the females, thus positive  $d$  difference values indicate a stronger magnitude for females and negative  $d$  difference values indicate a stronger magnitude for the males. Overall, Table 10 illustrates that 34.3% (12 out of 35) of indicators are gender neutral, 11.4% are gender salient (4 out of 35), and 34.3% (12 out of 35) are gender specific, and 20% were nil effects. Thus, 45% of the time there are gender differences at the indicator level—either gender salient or gender specific. Specifically, from Table 10, there are only four individual indicators (out of 35 or 11.4%) that emerged with significant differences in the magnitude of the effects between females and males (i.e., gender salient): number of

convictions ( $d_{diff} = .30$ , stronger for females), family substance abuse ( $d_{diff} = .21$ , stronger for females), chronic alcohol use ( $d_{diff} = .32$ , stronger for females), and chronic drug use ( $d_{diff} = -.12$ , stronger for males). Outside of these four individual indicators, the remaining indicators were not statistically significantly different in terms of their magnitude.

On the basis of the results of the effect size difference score for the individual risk indicators, it can be concluded that 34.3% (12 out of 35) of the individual indicators – prior convictions or arrests, failure to comply, and prior custody (within the criminal history domain), difficulty controlling behaviour, inappropriate discipline (within the problematic family circumstances and parenting domain), low academic achievement (within the education/employment problems domain), poor frustration tolerance (within the antisocial personality domain), defies authority, aggressive attitudes (within the antisocial attitudes domain), physical abuse, childhood maltreatment/neglect (within the child abuse domain), and history of running away (within other adversity) are gender neutral risk indicators (i.e., equally predictive for both males and females).

Finally, Tables 8 and 9 also indicate that a total of 12 (34.3%) individual risk indicators emerged as gender specific – three (8.6%) for females (truancy at school, callous/little concern for other/no empathy, and out of home placements) and nine (25.7%) for males (prior probation or community supervision, inadequate supervision, inconsistent parenting, current school problems, delinquent influences, gang affiliated/involved, could make better use of time, physically aggressive, and antisocial attitudes<sup>12</sup>). As hypothesized, the out of home placements risk indicator emerged as

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<sup>12</sup> Note antisocial attitudes refers to the individual indicator and not the overall domain as discussed in the global risk domain section. The overall global domain contains

gender specific for females.

Also indicated in Tables 8 and 9 are the individual indicators that did not emerge as predictive for either males or females. The seven (20.0%) non-significant individual risk indicators are: prior violence, prior weapons, limited organizational activities, no personal interests, sexual abuse, unstable living arrangements, and suicidality. Contrary to the specific hypothesis, living arrangements did not emerge as a gender specific factor for females as anticipated. The findings of this research suggest that living arrangements is not predictive of recidivism for either males or females.

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indicators including antisocial attitudes, defies authority, callous/little concern for others/no empathy, and aggressive attitudes.

Table 8

*Meta-Analysis of Risk Predictors of General Recidivism for Female Offender Youth at the Indicator Level*

|   | Fixed Effects |               | Random Effects |               | <i>Q</i> | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | Study ID             |
|---|---------------|---------------|----------------|---------------|----------|-----------------------|----------|----------|----------------------|
|   | <i>d</i>      | 95% <i>CI</i> | <i>d</i>       | 95% <i>CI</i> |          |                       |          |          |                      |
| <i>Criminal history</i>                                 |               |               |                |               |          |                       |          |          |                      |
| Prior convictions or arrests                            | 0.34          | [ 0.19, 0.49] | 0.31           | [ 0.11, 0.50] | 7.23     | 30.82                 | 1097     | 6        | 3, 5, 6, 16, 21, 22  |
| Failure to comply                                       | 0.50          | [ 0.30, 0.71] | 0.50           | [ 0.06, 0.94] | 8.42*    | 76.26                 | 588      | 3        | 6, 21, 22            |
| Prior probation of comm. supervision                    | 0.43          | [ 0.19, 0.67] | 0.78           | [-0.27, 1.83] | 25.14*** | 92.04                 | 508      | 3        | 6, 16, 21            |
| Prior custody   | 0.38          | [ 0.31, 0.46] | 0.44           | [ 0.04, 0.84] | 82.25*** | 93.92                 | 962      | 6        | 6, 7, 13, 20, 21, 22 |
| Number of convictions                                   | -0.02         | [-0.16, 0.12] | 0.28           | [-0.44, 1.00] | 48.55    | 95.88                 | 555      | 3        | 6, 13, 21            |
| Prior violence (offences, arrests)                      | 0.26          | [ 0.08, 0.43] | 0.16           | [-0.35, 0.67] | 11.59**  | 82.75                 | 614      | 3        | 4, 13, 16            |
| Prior weapons (offence, arrests)                        | -0.16         | [-0.40, 0.09] | -0.16          | [-0.40, 0.09] | 1.28     | 0.00                  | 1266     | 3        | 4, 12, 22            |
| <i>Problematic family circumstances &amp; parenting</i> |               |               |                |               |          |                       |          |          |                      |
| Inadequate supervision                                  | 0.19          | [ 0.00, 0.39] | 0.19           | [ 0.00, 0.39] | 0.91     | 0.00                  | 1241     | 4        | 6, 12, 21, 22        |

|                                    | Fixed Effects |               | Random Effects |               | $Q$   | $I^2$ | $N$  | $k$ | Study ID             |
|------------------------------------|---------------|---------------|----------------|---------------|-------|-------|------|-----|----------------------|
|                                    | $d$           | 95% CI        | $d$            | 95%CI         |       |       |      |     |                      |
| Difficulty controlling behaviour   | 0.56          | [ 0.34, 0.79] | 0.62           | [ 0.26, 0.97] | 5.19  | 42.21 | 610  | 4   | 6, 7, 21, 22         |
| Inappropriate discipline           | 0.19          | [ 0.03, 0.35] | 0.20           | [ 0.02, 0.37] | 4.48  | 10.62 | 1481 | 5   | 6, 12, 20, 21, 22    |
| Inconsistent parenting             | 0.19          | [-0.01, 0.39] | 0.19           | [-0.01, 0.39] | 0.73  | 0.00  | 588  | 3   | 6, 21, 22            |
| Family substance abuse             | 0.24          | [ 0.07, 0.42] | 0.24           | [ 0.07, 0.42] | 0.55  | 0.00  | 1392 | 3   | 4, 12, 20            |
| Family criminal history            | 0.29          | [ 0.13, 0.46] | 0.28           | [-0.07, 0.63] | 9.14* | 67.18 | 1426 | 4   | 4, 12, 16, 20        |
| ...outlier removed                 | 0.11          | [-0.09, 0.32] | 0.11           | [-0.09, 0.32] | 0.42  | 0.00  | 1186 | 3   | 4, 12, 16            |
| <i>Education/school concerns</i>   |               |               |                |               |       |       |      |     |                      |
| Low (academic) achievement         | 0.36          | [ 0.20, 0.52] | 0.39           | [ 0.16, 0.63] | 8.40  | 40.50 | 914  | 6   | 6, 7, 16, 20, 21, 22 |
| Truancy at school                  | 0.29          | [ 0.12, 0.47] | 0.29           | [ 0.12, 0.47] | 1.58  | 0.00  | 714  | 3   | 6, 20, 21            |
| Current school problems            | 0.07          | [ 0.00, 0.14] | 0.09           | [-0.02, 0.19] | 4.27  | 6.26  | 4232 | 5   | 2, 7, 16, 20, 22     |
| <i>Employment</i>                  |               |               |                |               |       |       |      |     |                      |
| Unemployed/ not seeking employment | 0.00          | [-0.07, 0.07] | 0.02           | [-0.15, 0.19] | 5.95  | 32.83 | 4444 | 5   | 2, 6, 21, 24, 22     |

|  | Fixed Effects |               | Random Effects |               | <i>Q</i> | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | Study ID             |
|--|---------------|---------------|----------------|---------------|----------|-----------------------|----------|----------|----------------------|
|  | <i>d</i>      | 95% <i>CI</i> | <i>d</i>       | 95% <i>CI</i> |          |                       |          |          |                      |
| <i>Antisocial peer relations</i>             |               |               |                |               |          |                       |          |          |                      |
| Delinquent influences                        | 0.11          | [-0.08, 0.31] | 0.11           | [-0.08, 0.31] | 1.41     | 0.00                  | 1321     | 6        | 6, 7, 12, 16, 21, 22 |
| Gang affiliated/ involved                    | -0.10         | [-0.32, 0.12] | -0.10          | [-0.32, 0.12] | 1.79     | 0.00                  | 1362     | 3        | 4, 12, 21            |
| <i>Substance abuse</i>                       |               |               |                |               |          |                       |          |          |                      |
| Chronic drug use                             | 0.27          | [ 0.06, 0.48] | 0.30           | [-0.10, 0.71] | 6.42*    | 68.84                 | 527      | 3        | 6, 7, 21             |
| Chronic alcohol use                          | 0.42          | [ 0.20, 0.64] | 0.46           | [ 0.04, 0.87] | 4.73     | 57.69                 | 515      | 3        | 6, 7, 21             |
| <i>Poor use leisure/recreation</i>           |               |               |                |               |          |                       |          |          |                      |
| Limited organ. activities                    | 0.19          | [-0.03, 0.42] | 0.19           | [-0.03, 0.42] | 0.51     | 0.00                  | 588      | 3        | 6, 21, 22            |
| Could make better use of leisure time        | 0.10          | [ 0.03, 0.17] | 0.17           | [-0.02, 0.36] | 3.44     | 41.93                 | 4293     | 3        | 2, 6, 21             |
| No personal interests                        | 0.15          | [-0.06, 0.36] | 0.15           | [-0.08, 0.37] | 2.34     | 14.61                 | 1127     | 3        | 6, 12, 21            |
| <i>Antisocial personality/ behaviour</i>     |               |               |                |               |          |                       |          |          |                      |
| Physically aggressive                        | 0.06          | [-0.14, 0.26] | 0.06           | [-0.14, 0.26] | 1.75     | 0.00                  | 588      | 3        | 6, 21, 22            |
| Poor frustration tolerance, anger management | 0.37          | [ 0.15, 0.59] | 0.37           | [ 0.09, 0.65] | 4.03     | 25.53                 | 622      | 4        | 6, 16, 21, 22        |

|   | Fixed Effects |               | Random Effects |               | <i>Q</i> | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | Study ID           |
|---|---------------|---------------|----------------|---------------|----------|-----------------------|----------|----------|--------------------|
|   | <i>d</i>      | 95% <i>CI</i> | <i>d</i>       | 95% <i>CI</i> |          |                       |          |          |                    |
| <i>Antisocial attitudes/orientation</i>             |               |               |                |               |          |                       |          |          |                    |
| Antisocial attitudes <sup>a</sup>                   | 0.19          | [-0.01, 0.39] | 0.19           | [-0.01, 0.39] | 0.52     | 0.00                  | 588      | 3        | 6, 21, 22          |
| Defies authority                                    | 0.54          | [ 0.31, 0.77] | 0.74           | [ 0.13, 1.35] | 11.05**  | 81.91                 | 588      | 3        | 6, 21, 22          |
| Callous, little concern for others, no/ low empathy | 0.35          | [ 0.13, 0.57] | 0.42           | [ 0.04, 0.79] | 4.25     | 52.96                 | 508      | 3        | 6, 16, 21          |
| Aggressive attitudes                                | 0.26          | [ 0.21, 0.31] | 0.23           | [ 0.07, 0.39] | 12.70**  | 84.25                 | 7435     | 3        | 2, 19, 22          |
| <i>Child abuse</i>                                  |               |               |                |               |          |                       |          |          |                    |
| Maltreatment/neglect                                | 0.08          | [ 0.02, 0.15] | 0.08           | [ 0.02, 0.15] | 1.16     | 0.00                  | 4543     | 5        | 12, 16, 19, 20, 22 |
| Sexual abuse  | 0.04          | [-0.02, 0.11] | 0.09           | [-0.06, 0.23] | 4.83     | 37.86                 | 4864     | 4        | 4, 12, 19, 21      |
| Physical abuse                                      | 0.11          | [ 0.05, 0.18] | 0.17           | [ 0.02, 0.32] | 5.08     | 40.89                 | 4864     | 4        | 4, 12, 19, 21      |
| <i>Other adversity</i>                              |               |               |                |               |          |                       |          |          |                    |
| Unstable living arrangements <sup>b</sup>           | 0.27          | [ 0.23, 0.30] | -1.56          | [-3.58, 0.46] | 1635.50  | 99.88                 | 4775     | 3        | 2, 12, 20          |
| History of runaway                                  | 0.38          | [ 0.19, 0.57] | 0.38           | [ 0.19, 0.57] | 2.05     | 0.00                  | 720      | 4        | 3, 7, 20, 22       |
| Out of home placements                              | 0.19          | [ 0.09, 0.29] | 0.28           | [ 0.03, 0.53] | 9.23     | 56.66                 | 1540     | 5        | 4, 12, 16, 20, 22  |

|             | Fixed Effects |               | Random Effects |               | $Q$  | $I^2$ | $N$  | $k$ | Study ID       |
|-------------|---------------|---------------|----------------|---------------|------|-------|------|-----|----------------|
|             | $d$           | 95% CI        | $d$            | 95%CI         |      |       |      |     |                |
| Suicidality | 0.07          | [-0.16, 0.31] | 0.07           | [-0.16, 0.31] | 0.48 | 0.00  | 1011 | 4   | 12, 16, 21, 22 |

*Note.* Positive  $d$  values indicate the effect size is larger among the recidivists compared with the non-recidivists. YLS/CMI = Youth Level of Service Case Management Inventory; PCL:YV = Hare Psychopathy Checklist: Youth Version.  $d$  = Cohen's  $d$  measure of effect size.  $Q$  = Cochran's  $Q$  to measure variability across studies.  $I^2$  = measures the effect size for the variability in  $Q$ ; heuristics for interpretation  $I^2$  variability – 25% (low), 50% (moderate), and 75% (high).  $N$  = number of participants in the analysis.  $k$  = number of studies in the analysis. Outlier(s) removed = outliers were removed if they met all 3 of the following criteria: 1. Most extreme value (positive or negative), 2. Accounted for more than 50% of the variance in the effect size, 3. Overall  $Q$  was significant. <sup>a</sup>Antisocial attitudes as an individual risk indicator is not the same as the antisocial attitudes risk domain; the risk domain is comprised of several risk indicators including: antisocial attitudes, not seeking help, actively rejecting help, defies authority, callous, little concern for others, no/low empathy, and aggressive attitudes (does not include behavior). <sup>b</sup>Unstable living arrangements – includes no permanent address and kicked out of home. A very large variability reported for unstable living arrangements effect – weight of the study was adjusted to be no more than half of the next largest weight, to limit the influence of this study on the overall effect; reported effect size in table is based on the reduced weight for this study. \*  $p < .05$ , \*\*  $p < 0.01$ , \*\*\*  $p < .001$

Table 9

*Meta-Analysis of Risk Predictors of General Recidivism for Male Offender Youth at the Indicator Level*

|   | Fixed Effects |               | Random Effects |                | <i>Q</i> | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | Study ID             |
|---|---------------|---------------|----------------|----------------|----------|-----------------------|----------|----------|----------------------|
|   | <i>d</i>      | 95% <i>CI</i> | <i>d</i>       | 95% <i>CI</i>  |          |                       |          |          |                      |
| <i>Criminal history</i>                                 |               |               |                |                |          |                       |          |          |                      |
| Prior convictions or arrests                            | 0.34          | [ 0.19, 0.49] | 0.46           | [ 0.33, 0.59]  | 6.61     | 24.38                 | 4864     | 6        | 3, 5, 6, 16, 21, 22  |
| Failure to comply                                       | 0.50          | [ 0.30, 0.71] | 0.63           | [ 0.19, 1.08]  | 10.00*   | 79.99                 | 1535     | 3        | 6, 21, 22            |
| Prior probation or comm. supervision                    | 0.43          | [ 0.19, 0.67] | 0.58           | [ 0.09, 1.08]  | 7.31*    | 72.65                 | 1324     | 3        | 6, 16, 21            |
| Prior custody   | 0.38          | [ 0.31, 0.46] | 0.40           | [ 0.19, 0.62]  | 26.36*** | 81.03                 | 3123     | 6        | 6, 7, 13, 20, 21, 22 |
| ...outlier removed                                      | 0.30          | [ 0.21, 0.39] | 0.33           | [ 0.06, 0.50]  | 9.58     | 58.25                 | 2230     | 5        | 7, 13, 20, 21, 22    |
| Number of convictions                                   | -0.02         | [-0.16, 0.12] | -0.03          | [-0.43, 0.36]  | 15.61*** | 87.18                 | 1582     | 3        | 6, 13, 21            |
| Prior violence (offences, arrests)                      | 0.26          | [ 0.08, 0.43] | 0.20           | [-0.10, 0.50]  | 5.09     | 60.72                 | 965      | 3        | 4, 13, 16            |
| Prior weapons (offences, arrests)                       | -0.16         | [-0.40-0.09]  | -0.16          | [-0.30, -0.03] | 0.87     | 0.00                  | 6027     | 3        | 4, 12, 22            |
| <i>Problematic family circumstances &amp; parenting</i> |               |               |                |                |          |                       |          |          |                      |
| Inadequate supervision                                  | 0.19          | [0.00, 0.39]  | 0.43           | [ 0.13, 0.74]  | 8.57*    | 64.98                 | 6713     | 4        | 6, 12, 21, 22        |
| ...outlier removed                                      | 0.22          | [0.01, 0.42]  | 0.32           | [ 0.20, 0.44]  | 1.52     | 0.00                  | 6363     | 3        | 6, 12, 21            |

|                                  | Fixed Effects |               | Random Effects |               | <i>Q</i> | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | Study ID             |
|----------------------------------|---------------|---------------|----------------|---------------|----------|-----------------------|----------|----------|----------------------|
|                                  | <i>d</i>      | 95% <i>CI</i> | <i>d</i>       | 95% <i>CI</i> |          |                       |          |          |                      |
| Difficulty controlling behaviour | 0.56          | [0.34, 0.79]  | 0.60           | [ 0.48, 0.73] | 2.47     | 0.00                  | 1616     | 4        | 6, 7, 21, 22         |
| Inappropriate discipline         | 0.19          | [0.03, 0.35]  | 0.19           | [-0.15, 0.52] | 17.39**  | 77.00                 | 7868     | 5        | 6, 12, 20, 21, 22    |
| ...outlier removed               | 0.21          | [0.02, 0.41]  | 0.33           | [ 0.03, 0.62] | 7.44     | 59.66                 | 7576     | 4        | 6, 12, 20, 22        |
| Inconsistent parenting           | 0.19          | [-0.01, 0.39] | 0.30           | [ 0.06, 0.54] | 3.95     | 49.43                 | 1535     | 3        | 6, 21, 22            |
| Family substance abuse           | 0.24          | [0.07, 0.42]  | 0.03           | [-0.22, 0.29] | 4.81     | 58.41                 | 6833     | 3        | 4, 12, 20            |
| Family criminal history          | 0.29          | [0.13, 0.46]  | 0.22           | [-0.08, 0.53] | 9.26*    | 67.62                 | 6972     | 4        | 4, 12, 16, 20        |
| <i>Education/school concerns</i> |               |               |                |               |          |                       |          |          |                      |
| Low (academic) achievement       | 0.27          | [0.19, 0.35]  | 0.29           | [ 0.17, 0.41] | 8.30     | 39.75                 | 2932     | 6        | 6, 7, 16, 20, 21, 22 |
| Truancy at school                | 0.20          | [0.12, 0.29]  | 0.25           | [-0.04, 0.54] | 18.73*** | 89.32                 | 2341     | 3        | 6, 20, 21            |
| Current school problems          | 0.13          | [ 0.09, 0.16] | 0.27           | [ 0.10, 0.45] | 19.78**  | 79.78                 | 12973    | 5        | 2, 7, 16, 20, 22     |
| ...outlier removed               | 0.12          | [ 0.08, 0.15] | 0.12           | [ 0.07, 0.17] | 3.28     | 8.40                  | 12623    | 4        | 2, 7, 16, 20         |
| <i>Employment problems</i>       |               |               |                |               |          |                       |          |          |                      |
| Unempl./not seeking empl.        | 0.00          | [-0.03, 0.04] | 0.04           | [-0.15, 0.23] | 14.77*   | 72.92                 | 12827    | 5        | 2, 6, 21, 24, 22     |
| ...outlier removed               | 0.00          | [-0.04, 0.03] | -0.04          | [-0.19, 0.11] | 5.84     | 48.60                 | 12477    | 4        | 2, 6, 21, 24         |

|  | Fixed Effects |               | Random Effects |               | <i>Q</i> | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | Study ID             |
|--|---------------|---------------|----------------|---------------|----------|-----------------------|----------|----------|----------------------|
|  | <i>d</i>      | 95% <i>CI</i> | <i>d</i>       | 95% <i>CI</i> |          |                       |          |          |                      |
| <i>Antisocial peer relations</i>             |               |               |                |               |          |                       |          |          |                      |
| Delinquent influences                        | 0.25          | [0.16, 0.34]  | 0.34           | [ 0.14, 0.55] | 19.74**  | 74.67                 | 6937     | 6        | 6, 7, 12, 16, 21, 22 |
| ...outlier removed                           | 0.19          | [0.09, 0.28]  | 0.19           | [ 0.09, 0.29] | 4.13     | 3.14                  | 6587     | 5        | 6, 7, 12, 16, 21     |
| Gang affiliated/involved                     | 0.15          | [0.04, 0.26]  | 0.15           | [ 0.04, 0.26] | 1.39     | 0.00                  | 5969     | 3        | 4, 12, 21            |
| <i>Substance abuse</i>                       |               |               |                |               |          |                       |          |          |                      |
| Chronic drug use                             | 0.56          | [0.42, 0.69]  | 0.47           | [-0.03, 0.97] | 22.07*** | 90.94                 | 1291     | 3        | 6, 7, 21             |
| Chronic alcohol use                          | 0.27          | [0.13, 0.40]  | 0.24           | [-0.20, 0.67] | 16.10*** | 87.58                 | 1291     | 3        | 6, 7, 21             |
| <i>Poor use leisure/ recreation</i>          |               |               |                |               |          |                       |          |          |                      |
| Limited organ. activities                    | 0.18          | [ 0.05, 0.31] | 0.18           | [-0.01, 0.36] | 4.06     | 50.73                 | 1535     | 3        | 6, 21, 22            |
| Could make better use of time                | 0.10          | [ 0.07, 0.14] | 0.27           | [ 0.01, 0.52] | 15.60*** | 87.18                 | 12438    | 3        | 2, 6, 21             |
| No personal interests                        | -0.06         | [-0.16, 0.04] | -0.03          | [-0.19, 0.13] | 4.43     | 54.86                 | 6363     | 3        | 6, 12, 21            |
| <i>Antisocial personality/behaviour</i>      |               |               |                |               |          |                       |          |          |                      |
| Physically aggressive                        | 0.35          | [ 0.23, 0.46] | 0.35           | [ 0.18, 0.53] | 3.97     | 49.56                 | 1535     | 3        | 6, 21, 22            |
| Poor frustration tolerance, anger management | 0.23          | [ 0.12, 0.34] | 0.29           | [ 0.05, 0.53] | 11.93*   | 74.86                 | 1674     | 4        | 6, 16, 21, 22        |
| ...outlier removed                           | 0.14          | [ 0.02, 0.27] | 0.14           | [ 0.02, 0.27] | 2.02     | 1.05                  | 1324     | 3        | 6, 16, 21            |

|  | Fixed Effects |               | Random Effects |               | <i>Q</i> | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | Study ID           |
|--|---------------|---------------|----------------|---------------|----------|-----------------------|----------|----------|--------------------|
|  | <i>d</i>      | 95% <i>CI</i> | <i>d</i>       | 95% <i>CI</i> |          |                       |          |          |                    |
| <i>Antisocial attitudes/orientation</i>            |               |               |                |               |          |                       |          |          |                    |
| Antisocial/pro-criminal attitudes <sup>a</sup>     | 0.25          | [ 0.14, 0.37] | 0.29           | [ 0.07, 0.51] | 6.34*    | 68.43                 | 1535     | 3        | 6, 21, 22          |
| Defies authority                                   | 0.38          | [ 0.27, 0.50] | 0.41           | [ 0.24, 0.57] | 3.70     | 45.94                 | 1533     | 3        | 6, 21, 22          |
| Callous, little concern for others, no/low empathy | 0.02          | [-0.13, 0.16] | 0.04           | [-0.23, 0.32] | 6.67*    | 70.03                 | 1324     | 3        | 6, 16, 21          |
| Aggressive attitudes                               | 0.30          | [ 0.27, 0.33] | 0.33           | [ 0.23, 0.42] | 14.62**  | 86.32                 | 21714    | 3        | 2, 19, 22          |
| <i>Child abuse</i>                                 |               |               |                |               |          |                       |          |          |                    |
| Maltreatment/neglect                               | 0.14          | [ 0.10, 0.18] | 0.19           | [ 0.05, 0.34] | 19.36**  | 79.34                 | 16934    | 5        | 12, 16, 19, 20, 22 |
| ...outlier removed                                 | 0.13          | [ 0.09, 0.17] | 0.13           | [ 0.08, 0.17] | 3.17     | 5.30                  | 16584    | 4        | 12, 16, 19, 20     |
| Sexual abuse                                       | 0.01          | [-0.03, 0.05] | 0.15           | [-0.10, 0.40] | 9.99*    | 69.96                 | 16080    | 4        | 4, 12, 19, 21      |
| ...outlier removed                                 | 0.00          | [-0.03, 0.04] | 0.00           | [-0.03, 0.04] | 1.41     | 0.00                  | 15581    | 3        | 12, 19, 21         |
| Physical abuse                                     | 0.10          | [ 0.06, 0.14] | 0.10           | [ 0.06, 0.14] | 0.63     | 0.00                  | 16080    | 4        | 4, 12, 19, 21      |
| <i>Other adversity</i>                             |               |               |                |               |          |                       |          |          |                    |
| Unstable living arrangements <sup>c</sup>          | 0.27          | [ 0.23, 0.30] | 0.04           | [-0.29, 0.36] | 43.86*** | 95.44                 | 17587    | 3        | 2, 12, 20          |
| History of runaway                                 | 0.31          | [ 0.22, 0.40] | 0.50           | [ 0.12, 0.87] | 36.42*** | 91.76                 | 4563     | 4        | 3, 7, 20, 22       |

|                        | Fixed Effects |               | Random Effects |               | $Q$     | $I^2$ | $N$  | $k$ | Study ID          |
|------------------------|---------------|---------------|----------------|---------------|---------|-------|------|-----|-------------------|
|                        | $d$           | 95% CI        | $d$            | 95%CI         |         |       |      |     |                   |
| Out of home placements | 0.19          | [ 0.09, 0.29] | 0.27           | [-0.02, 0.57] | 18.98** | 78.92 | 7322 | 5   | 4, 12, 16, 20, 22 |
| ...outlier removed     | 0.11          | [ 0.01, 0.22] | 0.16           | [-0.06, 0.38] | 5.28    | 43.13 | 6972 | 4   | 4, 12, 16, 20     |
| Suicidality            | 0.10          | [-0.04, 0.24] | 0.10           | [-0.04, 0.24] | 0.84    | 0.00  | 5959 | 4   | 12, 16, 21, 22    |

*Note.* Positive  $d$  values indicate the effect size is larger among the recidivists compared with the non-recidivists. YLS/CMI = Youth Level of Service Case Management Inventory; PCL:YV = Hare Psychopathy Checklist: Youth Version.  $d$  = Cohen's  $d$  measure of effect size.  $Q$  = Cochran's  $Q$  to measure variability across studies.  $I^2$  = measures the effect size for the variability in  $Q$ ; heuristics for interpretation  $I^2$  variability – 25% (low), 50% (moderate), and 75% (high).  $N$  = number of participants in the analysis.  $k$  = number of studies in the analysis. *Outlier(s) removed* = outliers were removed if they met all 3 of the following criteria: 1. Most extreme value (positive or negative), 2. Accounted for more than 50% of the variance in the effect size, 3. Overall  $Q$  was significant. <sup>a</sup>Antisocial attitudes as an individual risk indicator is not the same as the antisocial attitudes risk domain; the risk domain is comprised of several risk indicators including: antisocial attitudes, not seeking help, actively rejecting help, defies authority, callous, little concern for others, no/low empathy, and aggressive attitudes (does not include behavior). <sup>b</sup>Includes: current mental health, disorders (internalizing/externalizing, psychopathy, anxiety/depression, PTSD, conduct, affective), diagnosed/disordered (condition not specified). <sup>c</sup>Unstable living arrangements – includes no permanent address and kicked out of home.

\*  $p < .05$ , \*\*  $p < 0.01$ , \*\*\*  $p < .001$

Table 10

*Meta-Analysis of Difference Scores on Predictors of General Recidivism for Justice-Involved Youth at the Indicator Level*

|   | <i>Mean<br/>diff</i> | <i>Median<br/>diff</i> | Fixed Effects |               | Random Effects |               | <i>Q</i> | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | Study ID             |
|---|----------------------|------------------------|---------------|---------------|----------------|---------------|----------|-----------------------|----------|----------|----------------------|
|   |                      |                        | <i>d</i>      | <i>95% CI</i> | <i>d</i>       | <i>95%CI</i>  |          |                       |          |          |                      |
| <i>Criminal history</i>                                 |                      |                        |               |               |                |               |          |                       |          |          |                      |
| Prior convictions or arrests                            | -0.29                | -0.31                  | -0.10         | [-0.24-0.04]  | -0.22          | [-0.49, 0.05] | 14.48*   | 65.47                 | 5961     | 6        | 3, 5, 6, 16, 21, 22  |
| Failure to comply                                       | -0.14                | 0.12                   | -0.01         | [-0.22-0.19]  | -0.10          | [-0.53, 0.33] | 7.83*    | 74.44                 | 2123     | 3        | 6, 21, 22            |
| Prior probation or comm. supervision                    | 0.23                 | 0.38                   | -0.11         | [-0.24-0.02]  | 0.17           | [-0.37, 0.70] | 15.18**  | 86.83                 | 1832     | 3        | 6, 16, 21            |
| Prior custody   | 0.17                 | 0.04                   | 0.01          | [-0.09-0.11]  | 0.09           | [-0.19, 0.36] | 29.92*** | 83.29                 | 4085     | 6        | 6, 7, 13, 20, 21, 22 |
| Number of convictions                                   | 0.32                 | 0.28                   | 0.29          | [ 0.23-0.35]  | 0.30           | [ 0.21, 0.38] | 2.44     | 18.12                 | 2067     | 3        | 6, 13, 21            |
| Prior violence (offences, arrests)                      | 0.10                 | 0.04                   | -0.04         | [-0.21-0.13]  | -0.04          | [-0.21, 0.14] | 2.06     | 3.12                  | 1579     | 3        | 4, 13, 16            |
| Prior weapons (offences, arrests)                       | 0.03                 | -0.14                  | 0.01          | [-0.43-0.44]  | 0.01           | [-0.43, 0.44] | 1.72     | 0.00                  | 7293     | 3        | 4, 12, 22            |
| <i>Problematic family circumstances &amp; parenting</i> |                      |                        |               |               |                |               |          |                       |          |          |                      |
| Inadequate supervision                                  | -0.21                | -0.08                  | -0.18         | [-0.46, 0.09] | -0.20          | [-0.55, 0.15] | 4.25     | 29.45                 | 7954     | 4        | 6, 12, 21, 22        |

|                                      | <i>Mean<br/>diff</i> | <i>Median<br/>diff</i> | Fixed Effects |               | Random Effects |               | <i>Q</i> | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | Study ID                |
|--------------------------------------|----------------------|------------------------|---------------|---------------|----------------|---------------|----------|-----------------------|----------|----------|-------------------------|
|                                      |                      |                        | <i>d</i>      | <i>95% CI</i> | <i>d</i>       | <i>95%CI</i>  |          |                       |          |          |                         |
| Difficulty controlling beh.          | 0.33                 | 0.19                   | 0.06          | [-0.26, 0.37] | 0.06           | [-0.29, 0.40] | 3.33     | 9.89                  | 2226     | 4        | 6, 7, 21, 22            |
| Inappropriate disc.                  | 0.17                 | -0.00                  | 0.04          | [-0.19, 0.27] | 0.04           | [-0.39, 0.48] | 12.22*   | 67.27                 | 9349     | 5        | 6, 12, 20,<br>21, 22    |
| ...outlier removed                   | 0.43                 | 0.20                   | 0.14          | [-0.09, 0.38] | 0.19           | [-0.16, 0.55] | 5.59     | 46.33                 | 8885     | 4        | 6, 12, 20, 21           |
| Inconsistent parenting               | -0.17                | 0.09                   | -0.04         | [-0.36, 0.28] | -0.08          | [-0.51, 0.34] | 3.37     | 40.67                 | 2123     | 3        | 6, 21, 22               |
| Family subs. abuse                   | 0.17                 | 0.16                   | 0.21          | [ 0.05, 0.37] | 0.21           | [ 0.05, 0.37] | 0.70     | 0.00                  | 8225     | 3        | 4, 12, 20               |
| Family criminal history              | -0.00                | -0.05                  | 0.30          | [ 0.07, 0.53] | 0.13           | [-0.33, 0.59] | 9.15*    | 67.21                 | 8398     | 4        | 4, 12, 16, 20           |
| <i>Education/school concerns</i>     |                      |                        |               |               |                |               |          |                       |          |          |                         |
| Low (academic)<br>achievement        | 0.16                 | 0.12                   | 0.11          | [-0.01, 0.24] | 0.12           | [-0.06, 0.30] | 8.42     | 40.65                 | 3846     | 6        | 6, 7, 16, 20,<br>21, 22 |
| Truancy at school                    | 0.06                 | 0.09                   | 0.09          | [-0.02, 0.21] | 0.08           | [-0.07, 0.23] | 3.32     | 39.84                 | 3055     | 3        | 6, 20, 21               |
| Current school<br>problems           | -0.35                | -0.06                  | -0.05         | [-0.13, 0.02] | -0.05          | [-0.22, 0.12] | 5.05     | 20.85                 | 17205    | 5        | 2, 7, 16, 20,<br>22     |
| <i>Employment problems</i>           |                      |                        |               |               |                |               |          |                       |          |          |                         |
| Unemployed/not seeking<br>employment | 0.10                 | 0.00                   | 0.00          | [-0.08, 0.08] | 0.02           | [-0.26, 0.30] | 8.45     | 52.69                 | 17271    | 5        | 2, 6, 21, 24,<br>22     |

|  | <i>Mean<br/>diff</i> | <i>Median<br/>diff</i> | Fixed Effects |                | Random Effects |                | <i>Q</i> | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | Study ID             |
|--|----------------------|------------------------|---------------|----------------|----------------|----------------|----------|-----------------------|----------|----------|----------------------|
|  |                      |                        | <i>d</i>      | <i>95% CI</i>  | <i>d</i>       | <i>95%CI</i>   |          |                       |          |          |                      |
| <i>Antisocial peer relations</i>             |                      |                        |               |                |                |                |          |                       |          |          |                      |
| Delinquent influences                        | -0.23                | -0.09                  | -0.16         | [-0.41, 0.08]  | -0.16          | [-0.41, 0.08]  | 4.36     | 0.00                  | 8258     | 6        | 6, 7, 12, 16, 21, 22 |
| Gang affiliated/involved                     | -0.13                | -0.02                  | -0.26         | [-0.60, 0.08]  | -0.24          | [-0.61, 0.14]  | 2.32     | 13.96                 | 7331     | 3        | 4, 12, 21            |
| <i>Substance abuse</i>                       |                      |                        |               |                |                |                |          |                       |          |          |                      |
| Chronic drug use                             | -0.15                | -0.15                  | -0.12         | [-0.17, -0.06] | -0.12          | [-0.17, -0.06] | 1.93     | 0.00                  | 1818     | 3        | 6, 7, 21             |
| Chronic alcohol use                          | 0.28                 | 0.25                   | 0.32          | [ 0.27, 0.38]  | 0.32           | [ 0.27, 0.38]  | 0.85     | 0.00                  | 1806     | 3        | 6, 7, 21             |
| <i>Poor use leisure/recreation</i>           |                      |                        |               |                |                |                |          |                       |          |          |                      |
| Limited organ. activities                    | 0.06                 | 0.06                   | 0.11          | [-0.01, 0.24]  | 0.11           | [-0.01, 0.24]  | 0.90     | 0.00                  | 2123     | 3        | 6, 21, 22            |
| Could make better use of time                | 0.01                 | 0.00                   | -0.01         | [-0.04, 0.03]  | -0.01          | [-0.04, 0.03]  | 1.21     | 0.00                  | 16731    | 3        | 2, 6, 21             |
| No personal interests                        | 0.15                 | 0.14                   | 0.11          | [-0.12, 0.33]  | 0.11           | [-0.12, 0.33]  | 1.57     | 0.00                  | 7490     | 3        | 6, 12, 21            |
| <i>Antisocial personality/behaviour</i>      |                      |                        |               |                |                |                |          |                       |          |          |                      |
| Physically aggressive                        | -0.37                | -0.26                  | -0.27         | [-0.59, 0.04]  | -0.29          | [-0.65, 0.07]  | 2.54     | 21.31                 | 2123     | 3        | 6, 21, 22            |
| Poor frustration tolerance, anger management | 0.07                 | 0.11                   | 0.15          | [-0.18, 0.49]  | 0.11           | [-0.41, 0.63]  | 6.15     | 51.19                 | 2296     | 4        | 6, 16, 21, 22        |

|  | <i>Mean<br/>diff</i> | <i>Median<br/>diff</i> | Fixed Effects |                | Random Effects |               | <i>Q</i> | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | Study ID           |
|--|----------------------|------------------------|---------------|----------------|----------------|---------------|----------|-----------------------|----------|----------|--------------------|
|  |                      |                        | <i>d</i>      | <i>95% CI</i>  | <i>d</i>       | <i>95%CI</i>  |          |                       |          |          |                    |
| <i>Antisocial attitudes/ orientation</i>           |                      |                        |               |                |                |               |          |                       |          |          |                    |
| Antisocial/pro-criminal attitudes <sup>a</sup>     | -0.08                | -0.11                  | -0.06         | [-0.20, 0.07]  | -0.06          | [-0.20, 0.08] | 2.09     | 4.26                  | 2123     | 3        | 6, 21, 22          |
| Defies authority                                   | 0.35                 | 0.27                   | 0.21          | [-0.11, 0.52]  | 0.32           | [-0.35, 1.00] | 8.19*    | 75.57                 | 2121     | 3        | 6, 21, 22          |
| Callous, little concern for others, no/low empathy | 0.53                 | 0.72                   | 0.33          | [0.04, 0.62]   | 0.44           | [-0.20, 1.08] | 7.47*    | 73.21                 | 1832     | 3        | 6, 16, 21          |
| Aggressive attitudes                               | -0.24                | -0.09                  | -0.05         | [-0.12, 0.02]  | -0.06          | [-0.18, 0.06] | 3.69     | 45.81                 | 29149    | 3        | 2, 19, 22          |
| <i>Child abuse</i>                                 |                      |                        |               |                |                |               |          |                       |          |          |                    |
| Maltreatment/neglect                               | -0.12                | -0.06                  | -0.06         | [-0.15, 0.03]  | -0.06          | [-0.15, 0.03] | 3.98     | 0.00                  | 21477    | 5        | 12, 16, 19, 20, 22 |
| Sexual abuse                                       | -0.18                | -0.07                  | 0.00          | [-0.03, 0.04]  | -0.09          | [-0.24, 0.05] | 13.95**  | 78.50                 | 20944    | 4        | 4, 12, 19, 21      |
| ...outlier removed                                 | -0.04                | -0.07                  | 0.01          | [-0.03, 0.06]  | 0.01           | [-0.03, 0.06] | 1.26     | 0.00                  | 19946    | 3        | 12, 19, 21         |
| Physical abuse                                     | 0.13                 | 0.07                   | 0.00          | [-0.10, 0.09]  | 0.00           | [-0.10, 0.09] | 1.54     | 0.00                  | 20944    | 4        | 4, 12, 19, 21      |
| <i>Other adversity</i>                             |                      |                        |               |                |                |               |          |                       |          |          |                    |
| Living arrangements                                | -2.15                | -0.07                  | -0.07         | [-0.12, -0.02] | -0.43          | [-1.03, 0.16] | 35.43*** | 94.35                 | 22362    | 3        | 2, 12, 20          |
| History of runaway                                 | -0.19                | -0.08                  | 0.03          | [-0.19, 0.25]  | 0.00           | [-0.28, 0.27] | 4.00     | 24.99                 | 5283     | 4        | 3, 7, 20, 22       |

|                        | <i>Mean<br/>diff</i> | <i>Median<br/>diff</i> | Fixed Effects |               | Random Effects |               | <i>Q</i> | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | Study ID             |
|------------------------|----------------------|------------------------|---------------|---------------|----------------|---------------|----------|-----------------------|----------|----------|----------------------|
|                        |                      |                        | <i>d</i>      | <i>95% CI</i> | <i>d</i>       | <i>95%CI</i>  |          |                       |          |          |                      |
| Out of home placements | 0.15                 | 0.01                   | -0.01         | [-0.27, 0.25] | -0.01          | [-0.27, 0.25] | 3.79     | 0.00                  | 8862     | 5        | 4, 12, 16,<br>20, 22 |
| Suicidality            | -0.06                | -0.04                  | -0.02         | [-0.12, 0.08] | -0.02          | [-0.12, 0.08] | 0.37     | 0.00                  | 6970     | 4        | 12, 16, 21,<br>22    |

*Note.* Positive *d* values indicate the effect size is larger for females (ESdF-ESdM). YLS/CMI = Youth Level of Service Case Management Inventory; PCL:YV = Hare Psychopathy Checklist: Youth Version. *d* = Cohen's *d* measure of effect size. *Q* = Cochran's *Q* to measure variability across studies. *I*<sup>2</sup> = measures the effect size for the variability in *Q*; heuristics for interpretation *I*<sup>2</sup> variability – 25% (low), 50% (moderate), and 75% (high). *N* = number of participants in the analysis. *k* = number of studies in the analysis. *Outlier(s) removed* = outliers were removed if they met all 3 of the following criteria: 1. Most extreme value (positive or negative), 2. Accounted for more than 50% of the variance in the effect size, 3. Overall *Q* was significant. <sup>a</sup>Antisocial attitudes as an individual risk indicator is not the same as the antisocial attitudes risk domain; the risk domain is comprised of several risk indicators including: antisocial attitudes, not seeking help, actively rejecting help, defies authority, callous, little concern for others, no/low empathy, and aggressive attitudes (does not include behavior). <sup>b</sup>Includes: current mental health, disorders (internalizing/externalizing, psychopathy, anxiety/depression, PTSD, conduct, affective), diagnosed/disordered (condition not specified). \* *p* < .05, \*\* *p* < 0.01, \*\*\* *p* < .001

In summary, the results of the meta-analyses conducted on the individual risk indicators achieved the purpose of the study – to explore for evidence of gender neutrality, gender saliency, and gender specificity at the individual indicator level. In essence, 45% of the individual indicators examined showed evidence of gender differences – i.e., saliency or specificity, 34% were determined to be gender neutral, and 20% were nil effects. One of the three hypothesized indicators emerged as gender specific as expected; the out of home placements individual indicator was determined to be a female specific risk indicator (i.e., predictive for females only). The findings for the other two hypothesized risk factors were not as expected – history of running away emerged as a gender neutral risk indicator (i.e., equally predictive for both males and females) and unstable living arrangements (no permanent address shelter or kicked out of home) was not significantly predictive of recidivism for either females or males. A summary of the global risk domains and individual risk indicators as gender neutral, gender salient, or gender specific is presented in Table 11.

Table 11

*Summary of Meta-Analytic Results for Global Risk Domains and Individual Risk Indicators as Gender Neutral, Gender Salient, or Gender Specific*

| <i>Global risk domain</i>   | Gender Neutral | Gender Salient |       | Gender Specific |          | Not Significant |
|---|----------------|----------------|-------|-----------------|----------|-----------------|
| Individual risk indicator   |                | Females        | Males | Females         | Males    |                 |
| <b><i>Criminal history domain</i></b>                                 |                |                |       |                 | <b>X</b> |                 |
| Prior convictions or arrests  | X              |                |       |                 |          |                 |
| Failure to comply   | X              |                |       |                 |          |                 |
| Prior probation or comm. supervision                                  |                |                |       |                 | X        |                 |
| Prior custody   | X              |                |       |                 |          |                 |
| Number of convictions   |                | X              |       |                 |          |                 |
| Prior violence  |                |                |       |                 |          | X               |
| Prior weapons   |                |                |       |                 |          | X               |
| <b><i>Problematic family circumstances &amp; parenting domain</i></b> | <b>X</b>       |                |       |                 |          |                 |
| Inadequate supervision  |                |                |       |                 | X        |                 |
| Difficulty controlling behaviour                                      | X              |                |       |                 |          |                 |
| Inappropriate discipline  | X              |                |       |                 |          |                 |
| Inconsistent parenting  |                |                |       |                 | X        |                 |

| <i>Global risk domain</i>                 | Gender Neutral | Gender Salient |       | Gender Specific |       | Not Significant |
|---|----------------|----------------|-------|-----------------|-------|-----------------|
|   |                | Females        | Males | Females         | Males |                 |
| Individual risk indicator                 |                |                |       |                 |       |                 |
| Family substance abuse                    |                | X              |       |                 |       |                 |
| Family criminal history                   |                |                |       |                 |       | X               |
| <i>Education/school concerns</i>          |                |                |       |                 |       | <b>X</b>        |
| Low (academic) achievement                | X              |                |       |                 |       |                 |
| Truancy at school                         |                |                |       | X               |       |                 |
| Current school problems                   |                |                |       |                 | X     |                 |
| <i>Education/employment domain</i>        | X              |                |       |                 |       |                 |
| Unemployed/not seeking employment         |                |                |       |                 |       | X               |
| <i>Antisocial peer relations domain</i>   | X              |                |       |                 |       |                 |
| Delinquent influences                     |                |                |       |                 | X     |                 |
| Gang affiliated/ involved                 |                |                |       |                 | X     |                 |
| <i>Substance abuse domain</i>             | X              |                |       |                 |       |                 |
| Chronic drug use                          |                |                | X     |                 |       |                 |
| Chronic alcohol use                       |                | X              |       |                 |       |                 |
| <i>Poor use leisure/recreation domain</i> |                |                |       |                 |       | <b>X</b>        |
| Limited organ. activities                 |                |                |       |                 |       | X               |
| Could make better use of leisure time     |                |                |       |                 | X     |                 |

| <i>Global risk domain</i>                              | Gender Neutral | Gender Salient |       | Gender Specific |       | Not Significant |
|--|----------------|----------------|-------|-----------------|-------|-----------------|
| Individual risk indicator                              |                | Females        | Males | Females         | Males |                 |
| No personal interests                                  |                |                |       |                 |       | X               |
| <b><i>Antisocial personality/ behaviour domain</i></b> | <b>X</b>       |                |       |                 |       |                 |
| Physically aggressive                                  |                |                |       |                 | X     |                 |
| Poor frustration tolerance, anger management           | X              |                |       |                 |       |                 |
| <b><i>Antisocial attitudes/orientation domain</i></b>  | <b>X</b>       |                |       |                 |       |                 |
| Antisocial attitudes                                   |                |                |       |                 | X     |                 |
| Defies authority                                       | X              |                |       |                 |       |                 |
| Callous, little concern for others, no/low empathy     |                |                |       | X               |       |                 |
| Aggressive attitudes                                   | X              |                |       |                 |       |                 |
| <b><i>Mental health domain</i></b>                     |                |                |       |                 |       | <b>X</b>        |
| <b><i>Child abuse (all types) domain</i></b>           |                |                |       |                 |       | <b>X</b>        |
| Maltreatment/neglect                                   | X              |                |       |                 |       |                 |
| Sexual abuse   |                |                |       |                 |       | X               |
| Physical abuse   | X              |                |       |                 |       |                 |

| <i>Global risk domain</i>           | Gender Neutral | Gender Salient |       | Gender Specific |       | Not Significant |
|-------------------------------------|----------------|----------------|-------|-----------------|-------|-----------------|
|                                     |                | Females        | Males | Females         | Males |                 |
| Individual risk indicator           |                |                |       |                 |       |                 |
| <i>Other adversity</i> <sup>a</sup> | -              | -              | -     | -               | -     | -               |
| Living arrangements                 |                |                |       |                 |       | X               |
| History of runaway                  | X              |                |       |                 |       |                 |
| Out of home placements              |                |                |       | X               |       |                 |
| Suicidality                         |                |                |       |                 |       | X               |

*Note.* Gender neutral = equally predictive for both males and females. Gender salient = significantly predictive for both males and females but larger in magnitude for one gender over the other. Gender specific = significantly predictive for one gender over the other.  
<sup>a</sup>Other adversity was not combined and analyzed as an overall domain total as a result of the diversity of indicators; the individual indicators are analyzed at the indicator level only.

**Meta-Analysis of Domain Level Strength Factors and Recidivism: Evidence of Gender Neutrality, Gender Specificity or Gender Saliency at the Global Level**

The purpose of the second research question was to determine what strength factors are predictive of a successful outcome (i.e., no recidivism) among justice-involved youth and to what extent any of these factors would be gender neutral, gender salient or gender specific. As the research on strength factors is still relatively novel (and as such, fewer primary studies have been conducted) no specific a priori hypotheses were stated, other than that the global strength domains of family relationships and support, education and employment opportunities, prosocial peer relations, prosocial values and attitudes, extra-curricular activities and support, personality (honesty, self-efficacy, positive problem-solving), and rejection or absence of substance use would emerge as significant strength domains in the prediction of success (i.e., no recidivism). Table 12 presents the results of the global strength domains and success for the females and Table 13 shows the results for the males. It should be noted that negative values in Tables 12 and 13 reflect the expected relationship with the outcome (i.e., success) indicating that participants who did not recidivate have the larger effect – i.e., strength domains coded as positive (greater than 0) and success coded as 0 (no recidivism) and 1 (recidivism), thus the more strength, the less recidivism (demonstrating an inverse relationship between strengths and recidivism). As was done with the meta-analysis of the risk factors, a Cohen's *d* difference score was also calculated between the females and the males on the strength domains and meta-analyzed to determine if the difference score was significantly different than zero. The results of the meta-analysis with Cohen's *d* difference scores are presented in Table 14 and assist in determining whether there is evidence for gender

saliency (i.e., predictive for both males and females but a larger effect for one gender over the other), where negative values indicate a larger effect for females on strengths and positive values indicate the effect for males was larger for strengths.

As hypothesized, family relationships and support, education and employment opportunities, prosocial peer relations, and prosocial values and attitudes emerged as significant strength domains in the prediction of success (i.e., no recidivism).

Specifically, from Tables 12 and 13, it can be seen the domain of family relationships and support, and education and employment opportunities were significant for males and not females (confidence intervals contain zero for females). Also, prosocial values and attitudes was significantly predictive for females and not for males. Another strength domain, positive personality emerged as a large effect (based on the random effects model) for females ( $d = .54$ ), though the confidence interval overlapped with zero and interestingly was a null effect ( $d = .01$ ) for the males. Extra-curricular activities and community support was not a significant strength for either males or females.

Two of the seven domains emerged as significantly predictive of success for both males and females in Tables 12 and 13 – prosocial peer relations and rejection or absence of substance use. To test for evidence of gender saliency for prosocial peer relations and absence of substance use, Cohen's  $d$  difference scores were meta-analyzed. Recall that a non-significant difference score indicates gender neutrality of the domains; that is, equally predictive for both males and females. From Table 14, the difference score for rejection or absence of substance abuse was significantly different and was positive ( $d = .25$ ) indicating gender saliency for the males. Specifically, rejection or absence of substance abuse is predictive for both males and females; however the magnitude of the

effect is larger for males and is considered a gender salient strength domain. For the other strength domain that was significantly predictive for both males and females, prosocial peer relations, the Cohen's *d* difference score was not significantly different in Table 14 indicating gender neutrality. Thus, prosocial peer relations strength domain is equally predictive of success (i.e., no recidivism) for both males and females, and as such is considered gender neutral. Only one strength domain of the seven included was not significantly predictive of success for either males or females, the extra-curricular activities and community support – nor was the Cohen's *d* difference significantly different than zero (confidence interval included zero).

Table 12

*Meta-Analysis of Strength Predictors of Non (General) Recidivism Among Female Offender Youth at the Domain Level*

|  | Fixed Effects |                | Random Effects |                | <i>Q</i> | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | Study ID              |
|--|---------------|----------------|----------------|----------------|----------|-----------------------|----------|----------|-----------------------|
|  | <i>d</i>      | 95% <i>CI</i>  | <i>d</i>       | 95% <i>CI</i>  |          |                       |          |          |                       |
| Family Relationships & Support                                 | -0.51         | [-0.77, -0.25] | -0.83          | [-1.69, 0.03]  | 17.05**  | 82.40                 | 630      | 4        | 6, 17, 18, 23         |
| Education & Employ. Opportunities                              | 0.12          | [-0.27, 0.52]  | 0.12           | [-0.27, 0.52]  | 0.05     | 0.00                  | 426      | 3        | 6, 22, 23             |
| Prosocial Peer Relations                                       | -0.46         | [-0.68, -0.24] | -0.48          | [-0.97, 0.01]  | 13.89*   | 71.21                 | 1347     | 5        | 6, 12, 17, 22, 23     |
| ...outlier removed   | -0.37         | [-0.60, -0.14] | -0.31          | [-0.63, -0.02] | 4.78     | 37.29                 | 1299     | 4        | 6, 12, 17, 22         |
| Extra-Curricular Act. & Comm. Support                          | -0.32         | [-0.54, -0.10] | -0.32          | [-0.70, 0.07]  | 10.60    | 52.82                 | 1381     | 6        | 6, 12, 16, 17, 22, 23 |
| Personality (honesty, self-efficacy, positive problem-solving) | -0.41         | [-0.87, 0.05]  | -0.54          | [-1.97, 0.89]  | 15.84*** | 87.38                 | 965      | 3        | 6, 12, 23             |
| Prosocial Values & Attitudes                                   | -1.48         | [-2.15, -0.82] | -1.22          | [-2.40, -0.04] | 5.05     | 60.39                 | 346      | 3        | 6, 16, 23             |
| Rejection or Absence of Substance Use                          | -0.31         | [-0.59, -0.03] | -0.31          | [-0.59, -0.03] | 0.60     | 0.00                  | 580      | 3        | 6, 17, 23             |

*Note.* Positive *d* values indicate the effect size is larger among for successful cases (i.e., no recidivism = 0) compared with non-

successful cases (i.e., recidivism = 1).  $d$  = Cohen's  $d$  measure of effect size.  $Q$  = Cochran's  $Q$  to measure variability across studies.  $I^2$  = measures the effect size for the variability in  $Q$ ; heuristics for interpretation of  $I^2$  variability – 25% (low), 50% (moderate), and 75% (high).  $N$  = number of participants in the analysis.  $k$  = number of studies in the analysis. \*  $p < .05$ , \*\*  $p < 0.01$ , \*\*\*  $p < .001$

Table 13

*Meta-Analysis of Strength Predictors of Non (General) Recidivism Among Male Offender Youth at the Domain Level*

|  | Fixed Effects |                | Random Effects |                | <i>Q</i> | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | Study ID              |
|--|---------------|----------------|----------------|----------------|----------|-----------------------|----------|----------|-----------------------|
|  | <i>d</i>      | 95% <i>CI</i>  | <i>d</i>       | 95% <i>CI</i>  |          |                       |          |          |                       |
| Family Relationships & Support                                 | -0.57         | [-0.72, -0.42] | -0.57          | [-0.72, -0.42] | 0.96     | 0.00                  | 1873     | 4        | 6, 17, 18, 23         |
| Education & Employ. Opportunities                              | -0.56         | [-0.76, -0.35] | -0.68          | [-1.19, -0.17] | 6.90*    | 71.01                 | 1405     | 3        | 6, 22, 23             |
| Prosocial Peer Relations                                       | -0.39         | [-0.48, -0.29] | -0.48          | [-0.70, -0.26] | 14.47*   | 72.36                 | 7351     | 5        | 6, 12, 17, 22, 23     |
| Extra-Curricular Act. & Comm. Support                          | -0.25         | [-0.34, -0.15] | -0.41          | [-0.77, 0.05]  | 50.80*** | 90.16                 | 7490     | 6        | 6, 12, 16, 17, 22, 23 |
| Personality (honesty, self-efficacy, positive problem-solving) | 0.16          | [ 0.03, 0.29]  | 0.01           | [-0.76, 0.79]  | 20.29*** | 90.15                 | 6233     | 3        | 6, 12, 23             |
| Prosocial Values & Attitudes                                   | -0.51         | [-0.76, -0.25] | -0.29          | [-0.89, 0.30]  | 8.17*    | 75.53                 | 1193     | 3        | 6, 16, 23             |
| Rejection or Absence of Substance Use                          | -0.57         | [-0.72, -0.41] | -0.57          | [-0.72, -0.41] | 1.34     | 0.00                  | 1823     | 3        | 6, 17, 23             |

*Note.* Positive *d* values indicate the effect size is larger among for successful cases (i.e., no recidivism = 0) compared with non-successful cases (i.e., recidivism = 1). *d* = Cohen's *d* measure of effect size. *Q* = Cochran's *Q* to measure variability across studies. *I*<sup>2</sup>

= measures the effect size for the variability in  $Q$ ; heuristics for interpretation of  $I^2$  variability – 25% (low), 50% (moderate), and 75% (high).  $N$  = number of participants in the analysis.  $k$  = number of studies in the analysis. \*  $p < .05$ , \*\*  $p < 0.01$ , \*\*\*  $p < .001$

Table 14

*Meta-Analysis of Difference Scores on Strengths Predictors of Non (General) Recidivism for Justice-Involved Youth at the Domain Level*

|  | <i>Mean<br/>diff</i> | <i>Median<br/>diff</i> | Fixed    |                | Random   |                | <i>Q</i> | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | Study ID              |
|--|----------------------|------------------------|----------|----------------|----------|----------------|----------|-----------------------|----------|----------|-----------------------|
|  |                      |                        | <i>d</i> | <i>95% CI</i>  | <i>d</i> | <i>95%CI</i>   |          |                       |          |          |                       |
| Family Relationships & Support                                 | -0.15                | -0.42                  | -0.02    | [-0.39, 0.35]  | -0.27    | [-1.15, 0.61]  | 7.06     | 57.50                 | 2503     | 4        | 6, 17, 18, 23         |
| Education & Employ. Opportunities                              | 1.01                 | 1.02                   | 0.68     | [ 0.09, 1.28]  | 0.68     | [ 0.09, 1.28]  | 1.28     | 1.12                  | 1831     | 3        | 6, 22, 23             |
| Prosocial Peer Relations                                       | 0.04                 | -0.03                  | 0.01     | [-0.22, 0.25]  | -0.03    | [-0.55, 0.50]  | 13.92*   | 71.26                 | 8698     | 5        | 6, 12, 17, 22, 23     |
| Extra-Curricular Act. & Comm. Support                          | -0.09                | 0.06                   | 0.05     | [-0.11, 0.21]  | 0.02     | [-0.21, 0.25]  | 7.13     | 29.87                 | 8871     | 6        | 6, 12, 16, 17, 22, 23 |
| Personality (honesty, self-efficacy, positive problem-solving) | -0.79                | -0.84                  | -0.66    | [-1.00, -0.31] | -0.77    | [-1.60, 0.06]  | 10.19*   | 80.38                 | 7198     | 3        | 6, 12, 23             |
| Prosocial Values & Attitudes                                   | -0.80                | -0.46                  | -1.02    | [-1.46, -0.58] | -0.90    | [-1.68, -0.11] | 5.19     | 61.43                 | 1539     | 3        | 6, 16, 23             |
| Rejection or Absence of Substance Use                          | 0.22                 | 0.25                   | 0.25     | [ 0.13, 0.37]  | 0.25     | [ 0.13, 0.37]  | 0.21     | 0.00                  | 2403     | 3        | 6, 17, 23             |

*Note.* Negative  $d$  values indicate the effect size is larger for females compared with males given the inverse relationship between strengths and success – i.e., strengths coded as greater than 0 and success (no recidivism) = 0). Median diff = median difference in effect size between males and females.  $d$  = Cohen's  $d$  measure of effect size.  $Q$  = Cochran's  $Q$  to measure variability across studies.  $I^2$  = measures the effect size for the variability in  $Q$ ; heuristics for interpretation of  $I^2$  variability – 25% (low), 50% (moderate), and 75% (high).  $N$  = number of participants in the analysis.  $k$  = number of studies in the analysis. \*  $p < .05$ , \*\*  $p < 0.01$ , \*\*\*  $p < .001$ .

To summarize, six of the seven strength hypothesized strength domains emerged as significant predictors of success (i.e., no recidivism) among female and male justice-involved youth. More specifically, family relationships and support, education and employment opportunities, prosocial peer relations, prosocial values and attitudes, and rejection or absence of substance abuse were significant and personality approached significance (for females). Importantly, the meta-analysis of the global strength domains for each gender (Tables 12 and 13) and Cohen's *d* difference score (Table 14) generated evidence for gender differences on strength factors predictive of success as summarized in Table 15.

Table 15

*Summary of Meta-Analytic Results for Global Strength Domains as Gender Neutral, Gender Salient, or Gender Specific*

| Global strength domain                                     | Gender Neutral | Gender Salient |       | Gender Specific |       | Not Significant |
|--|----------------|----------------|-------|-----------------|-------|-----------------|
|  |                | Females        | Males | Females         | Males |                 |
| Family relationships and support                           |                |                |       |                 | X     |                 |
| Education and employment opportunities                     |                |                |       |                 | X     |                 |
| Prosocial peer relations                                   | X              |                |       |                 |       |                 |
| Extra-curricular activities and community support          |                |                |       |                 |       | X               |
| Personality (honesty, self-efficacy, +ve, problem-solving) |                |                |       | X <sup>†</sup>  |       |                 |
| Prosocial values and attitudes                             |                |                |       | X               |       |                 |
| Rejection or absence of substance use                      |                |                | X     |                 |       |                 |

*Note.* Gender neutral = equally predictive for both males and females. Gender salient = significantly predictive for both males and females but larger in magnitude for one gender over the other. Gender specific = significantly predictive for one gender over the other.

<sup>†</sup> Approaching significance as a large effect for females and not predictive for males (i.e., a null effect,  $d = .01$ )

### **Moderator Analysis**

The original intention was to examine to what extent potential moderator variables such as sample risk level (low, moderate, high), case status (adjudicated/sentenced, arrested, pre-trial), and study type (retrospective, prospective) may have influenced the results. However potential moderator variable information was either unavailable for a sufficient number of studies or could not be reliably coded from the few studies that reported this information. Additionally, given the number of studies that were contributing to the overall average effect sizes, particularly at the indicator level, there was insufficient power to run these analyses. Thus the only moderator analysis that was conducted was for publication bias for the global risk domains that had a sufficient number of studies contributing to the average effect (recall that a minimum of three studies was required at each level of the moderator variable) for the criminal history, problematic family circumstances and parenting, education and employment problems, antisocial peer relations, substance abuse, poor use of leisure/recreation time, antisocial personality, antisocial attitudes, and YLS/CMI total score.

**Publication bias.** A common criticism of meta-analyses is the over-reliance on published studies and statistically significant findings (Borenstein et al., 2009; Rosenthal, 1979). While the goal of a comprehensive search strategy for meta-analysis is to identify as many relevant articles as possible, including both published and unpublished work, there is always the inherent risk of relying on significant findings published in the research because of the relative ease with which they can be found. To evaluate whether publication bias can be attributed to the findings presented herein, moderator analyses were conducted for the factors with sufficient studies (i.e., three studies at each level of

the moderator) to enable the analysis. Tables 16 and 17 presents the fixed-effects analyses<sup>13</sup> of overall risk domains with publication status (e.g., published/not published) as a moderator, for justice-involved female and male youth, respectively. Using between-level  $Q$  as a measure of the variance explained by the moderator ‘published’, there are some noteworthy findings to consider with respect to publication bias.

*Publication status as a moderator for global risk domains - females.* There were two risk domain scores that demonstrated significant variability explained by publication status – problematic family circumstances and parenting ( $Q_{\text{between}} = 16.30, df = 1, p < .001$ ), and antisocial personality/behaviour ( $Q_{\text{between}} = 11.97, df = 1, p < .01$ ), as well as the overall total YLS/CMI score ( $Q_{\text{between}} = 14.84, df = 1, p < .001$ ). From the results in Table 16, it seems the non-published studies have significantly higher effects for the females for the domains of problematic family circumstances and parenting ( $d_{\text{unpublished}} = 0.50$  and  $d_{\text{published}} = 0.19$ ), antisocial personality/behaviour ( $d_{\text{unpublished}} = 0.63$  and  $d_{\text{published}} = 0.23$ ), and total YLS/CMI score ( $d_{\text{unpublished}} = 0.73$  and  $d_{\text{published}} = 0.35$ ).

*Publication status as a moderator for global risk domains - males.* For the criminal history ( $d_{\text{unpublished}} = 0.19$  and  $d_{\text{published}} = 0.34$ ), problematic family circumstances and parenting ( $d_{\text{unpublished}} = 0.13$  and  $d_{\text{published}} = 0.24$ ), and antisocial attitudes/orientation ( $d_{\text{unpublished}} = 0.24$  and  $d_{\text{published}} = 0.35$ ) risk factors, the mean effects for the unpublished studies were lower, whereas for the substance abuse domain, the mean effect for the unpublished studies was significantly higher ( $d_{\text{unpublished}} = 0.32$  and  $d_{\text{published}} = 0.18$ ).

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<sup>13</sup> Fixed effects analysis is used to report the results of moderator analysis in meta-analysis because there is insufficient power in random effects models with moderators, particularly with a small number of studies (K. Babchishin, personal communication, December 8, 2016).

published = 0.16).

In general, if there was a publication bias, one would expect there would be less variation in whether the published studies have higher effects or vice versa. In other words, if there was an indication of publication bias, it would be reasonable to expect a more consistent finding that published studies have significantly higher effects however based on the results of the moderator analysis there is no evidence to suggest that the results are influenced by publication bias because there are large effects for both published and non-published studies.

**Orwin's fail-safe  $N$ .** Another method of looking at publication bias is by calculating Orwin's fail-safe  $N$  (Orwin, 1983). The fail-safe –  $N$  calculates the number of hidden studies needed to bring the overall effect below a specified level. Using a conservative critical value for  $d_c = 0.05$ , considered a null effect by Cohen's (1969) standards, the  $N_{fs}$  were calculated for each of the overall domains included in the moderator analysis for publication status, by gender. For females, these values were as follows: criminal history ( $N_{fs} = 43$ ), problematic family circumstances and parenting ( $N_{fs} = 42$ ), education/employment concerns ( $N_{fs} = 72$ ), antisocial peer relations ( $N_{fs} = 48$ ), substance abuse ( $N_{fs} = 3$ ), poor use of leisure/recreation ( $N_{fs} = 22$ ), antisocial personality/behaviour ( $N_{fs} = 56$ ), antisocial attitudes/orientation ( $N_{fs} = 48$ ), and YLS/CMI total score ( $N_{fs} = 122$ ). For the males, the  $N_{fs}$  were relatively similar for all domains except for substance abuse as follows: criminal history ( $N_{fs} = 49$ ), problematic family circumstances and parenting ( $N_{fs} = 43$ ), education/employment concerns ( $N_{fs} = 59$ ), antisocial peer relations ( $N_{fs} = 67$ ), substance abuse ( $N_{fs} = 42$ ), poor use of leisure/recreation ( $N_{fs} = 38$ ), antisocial personality/behaviour ( $N_{fs} = 34$ ), antisocial

attitudes/orientation ( $N_{fs} = 70$ ), and YLS/CMI total score ( $N_{fs} = 115$ ).

Taken together, the results of the moderator analysis as well as calculations for fail-safe N, do not provide overwhelming evidence to suggest that the results are biased in favour of publication status. Given the comprehensiveness of the search strategies employed and rigorous selection criteria, it is unlikely that the number of studies required to reduce the effect sizes to a null effect remain to be found.

Table 16

*Meta-Analysis of Predictors of Risk of General Recidivism Among Female Offender Youth – Publication Status as Moderator at the Domain Level*

|  | Fixed Effects |               | <i>Q</i>         | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | Study ID                                  |
|--|---------------|---------------|------------------|-----------------------|----------|----------|---|
|  | <i>d</i>      | 95% <i>CI</i> |                  |                       |          |          |   |
| Criminal history                             | 0.29          | 0.23-0.35     | 55.19***         | 85.50                 | 5475     | 9        | 1, 2, 11 <sup>a</sup> , 13,14, 17, 21, 23 |
| Published                                    | 0.32          | 0.25-0.38     | 34.15***         | 91.22                 | 4588     | 4        | 1, 2, 14, 17                              |
| Not published                                | 0.17          | 0.03-0.32     | 17.94**          | 77.70                 | 887      | 5        | 11, 13, 13, 21, 23                        |
|  |               |               | <i>Q Between</i> | 3.10                  |          |          |   |
| Problematic family circumstances & parenting | 0.22          | 0.18-0.27     | 50.36***         | 78.16                 | 9327     | 12       | 1, 2, 3, 11, 13, 14, 17, 19, 21, 23, 24   |
| Published                                    | 0.19          | 0.14-0.24     | 24.00***         | 79.17                 | 8403     | 6        | 1, 2, 3,14, 17, 19                        |
| Not published                                | 0.50          | 0.36-0.65     | 10.06            | 50.28                 | 924      | 6        | 11, 13, 21, 23, 24                        |
|  |               |               | <i>Q Between</i> | 16.30***              |          |          |   |
| Education/employment problems                | 0.50          | 0.38-0.62     | 10.78            | 35.04                 | 1285     | 8        | 3, 1, 13, 14, 21, 23 24                   |
| Published                                    |               |               | -                | -                     |          |          |   |
| Not published                                |               |               | -                | -                     |          |          |   |
|  |               |               | <i>Q Between</i> | -                     |          |          |   |

|   | Fixed Effects |               | <i>Q</i>         | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | Study ID   |
|---|---------------|---------------|------------------|-----------------------|----------|----------|--|
|   | <i>d</i>      | 95% <i>CI</i> |                  |                       |          |          |  |
| Antisocial Peer Relations                                   | 0.25          | 0.20-0.31     | 57.12***         | 80.74                 | 5748     | 12       | 1, 3, 11, 13, 14, 17, 19, 20, 21, 23, 24,              |
| Published   | 0.23          | 0.17-0.29     | 19.37**          | 74.19                 | 4824     | 6        | 1, 3, 14, 17, 19, 20                                   |
| Not published   | 0.38          | 0.23-0.52     | 34.55***         | 85.53                 | 924      | 6        | 11, 13, 21, 23, 24                                     |
|   |               |               | <i>Q Between</i> | 3.20                  |          |          |  |
| Substance abuse   | 0.06          | 0.02-0.11     | 25.25            | 40.59                 | 9877     | 16       | 1, 2, 3, 5, 11, 13, 14, 16, 17, 19, 20, 21, 22, 23, 24 |
| Published   | 0.05          | 0.01-0.10     | 13.90            | 49.64                 | 8805     | 8        | 1, 2, 3, 5, 14, 17, 19, 20                             |
| Not published   | 0.14          | 0.00-0.27     | 10.11            | 30.77                 | 1072     | 8        | 11, 13, 16, 21, 22, 23, 24                             |
|   |               |               | <i>Q Between</i> | 1.24                  |          |          |  |
| Poor use leisure/recreation time,<br><i>outlier removed</i> | 0.11          | 0.01-0.21     | 9.75             | 17.92                 | 1897     | 9        | 1, 3, 11, 14, 20, 21, 23, 24                           |
| Published   | 0.13          | 0.00-0.26     | 4.09             | 26.69                 | 1054     | 4        | 1, 3, 14, 20   |
| Not published   | 0.09          | -0.07-0.24    | 5.48             | 26.96                 | 843      | 5        | 11, 21, 23, 24   |
|   |               |               | <i>Q Between</i> | 0.18                  |          |          |  |

|                       | Fixed Effects |           | $Q$      | $I^2$ | $N$  | $k$ | Study ID                                  |
|-----------------------|---------------|-----------|----------|-------|------|-----|---|
|                       | $d$           | 95% CI    |          |       |      |     |   |
| Personality/behaviour | 0.40          | 0.29-0.51 | 16.05*   | 56.39 | 1528 | 8   | 1, 3, 11,13, 14, 23, 24                   |
| Published             | 0.23          | 0.09-0.38 | 0.65     | 0.00  | 814  | 3   | 1, 3, 14                                  |
| Not published         | 0.63          | 0.46-0.79 | 3.43     | 0.00  | 714  | 5   | 11, 13, 23, 24                            |
|                       | $Q$ Between   |           | 11.97**  |       |      |     |   |
| Attitudes/orientation | 0.25          | 0.21-0.30 | 35.78*** | 69.25 | 9093 | 12  | 1, 2, 3, 11, 11, 13, 14, 16, 19, 21, 24   |
| Published             | 0.25          | 0.20-0.30 | 15.26**  | 73.78 | 8135 | 5   | 1, 2, 3, 14, 19                           |
| Not published         | 0.29          | 0.15-0.43 | 20.22**  | 70.32 | 958  | 7   | 11, 13, 16, 21, 23, 24                    |
|                       | $Q$ Between   |           | 0.30     |       |      |     |   |
| YLS/CMI total score   | 0.56          | 0.47-0.66 | 35.05*** | 68.62 | 2038 | 12  | 1, 3, 6, 8, 9, 11, 13, 14, 16, 21, 23, 24 |
| Published             | 0.35          | 0.20-0.49 | 5.98     | 49.81 | 848  | 4   | 1, 3, 14, 16                              |
| Not published         | 0.73          | 0.60-0.86 | 14.23    | 50.81 | 1190 | 8   | 6, 9, 11, 13, 21, 23, 4                   |
|                       | $Q$ Between   |           | 14.84*** |       |      |     |   |

*Note.* Positive  $d$  values indicate the effect size is larger among the recidivists compared with the non-recidivists.  $d$  = Cohen's  $d$  measure of effect size.  $Q$  = Cochran's  $Q$  to measure variability across studies.  $I^2$  = measures the effect size for the variability in  $Q$ ; heuristics for interpretation of  $I^2$  variability – 25% (low), 50% (moderate), and 75% (high).  $N$  = number of participants in the analysis.  $k$  = number of studies in the analysis.  $Q$  Between = is the difference in the variability between levels of the moderator or the proportion of the overall variability that is explained by the moderator. \*  $p < .05$ , \*\*  $p < 0.01$ , \*\*\*  $p < .001$

Table 17

*Meta-Analysis of Predictors of Risk of General Recidivism Among Male Offender Youth – Publication Status as Moderator at the Domain Level*

|   | Fixed Effects |               | <i>Q</i>         | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | STUDY ID                                |
|---|---------------|---------------|------------------|-----------------------|----------|----------|---|
|   | <i>d</i>      | 95% <i>CI</i> |                  |                       |          |          |   |
| Criminal history                                | 0.32          | 0.29-0.35     | 123.24***        | 93.51                 | 15537    | 9        | 1, 2, 11, 13,14, 17, 21, 23             |
| Published                                       | 0.34          | 0.30-0.37     | 101.44***        | 97.04                 | 13368    | 4        | 1, 2, 14, 17                            |
| Not published                                   | 0.19          | 0.11-0.28     | 12.30*           | 67.48                 | 2169     | 5        | 11, 13, 21, 23                          |
|   |               |               | <i>Q Between</i> |                       |          |          |   |
|   |               |               | 9.50**           |                       |          |          |   |
| Problematic family circumstances & parenting    | 0.23          | 0.21-0.26     | 157.82***        | 93.03                 | 28638    | 12       | 1, 2, 3, 11, 13, 14, 17, 19, 21, 23, 24 |
| Published                                       | 0.24          | 0.22-0.27     | 111.63***        | 95.52                 | 26430    | 6        | 1, 2, 3, 14, 17, 19                     |
| Not published                                   | 0.13          | 0.04-0.22     | 40.27***         | 87.58                 | 2208     | 6        | 11, 13, 21, 23, 24                      |
|   |               |               | <i>Q Between</i> |                       |          |          |   |
|   |               |               | 5.92*            |                       |          |          |   |
| Education/employment problems, outliers removed | 0.38          | 0.32-0.44     | 2.10             | 0.00                  | 4750     | 6        | 3, 11, 14, 21, 24                       |
| Published                                       |               |               | -                |                       |          |          |   |
| Not published                                   |               |               | -                |                       |          |          |   |
|   |               |               | <i>Q Between</i> |                       |          |          |   |
|   |               |               | -                |                       |          |          |   |

|   | Fixed Effects |               | <i>Q</i>         | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | STUDY ID   |
|---|---------------|---------------|------------------|-----------------------|----------|----------|--|
|   | <i>d</i>      | 95% <i>CI</i> |                  |                       |          |          |  |
| Antisocial peer relations,<br><i>outliers removed</i> | 0.40          | 0.36-0.43     | 27.62**          | 67.41                 | 14822    | 10       | 1, 11, 13, 14, 19, 20, 21, 23, 24                      |
| Published   | 0.39          | 0.35-0.42     | 7.55             | 60.26                 | 12614    | 4        | 1, 14, 19, 20  |
| Not published   | 0.45          | 0.36-0.53     | 18.56**          | 73.07                 | 2208     | 6        | 11, 13, 21, 23, 24                                     |
|   |               |               | <i>Q Between</i> | 1.51                  |          |          |  |
| Substance abuse                                       | 0.18          | 0.15-0.20     | 84.08***         | 82.16                 | 30523    | 16       | 1, 2, 3, 5, 11, 13, 14, 16, 17, 19, 20, 21, 22, 23, 24 |
| Published   | 0.16          | 0.14-0.19     | 64.05***         | 89.07                 | 27826    | 8        | 1, 2, 3, 5, 14, 17, 19, 20                             |
| Not published   | 0.32          | 0.24-0.40     | 7.19             | 2.66                  | 2697     | 8        | 11, 13, 16, 21, 22, 23, 24                             |
|   |               |               | <i>Q Between</i> | 12.84***              |          |          |  |
| Poor use leisure/recreation time                      | 0.24          | 0.20-0.29     | 61.92***         | 85.47                 | 7662     | 10       | 1, 3, 11, 13, 14, 20, 21, 23, 24                       |
| Published   | 0.22          | 0.17-0.27     | 1.47             | 0.00                  | 5454     | 4        | 1, 3, 14, 20   |
| Not published   | 0.31          | 0.22-0.39     | 57.73***         | 91.34                 | 2208     | 6        | 11, 13, 21, 23, 24                                     |
|   |               |               | <i>Q Between</i> | 2.72                  |          |          |  |

|                       | Fixed Effects |               | <i>Q</i>         | <i>I</i> <sup>2</sup> | <i>N</i> | <i>k</i> | STUDY ID                                    |
|-----------------------|---------------|---------------|------------------|-----------------------|----------|----------|---|
|                       | <i>d</i>      | 95% <i>CI</i> |                  |                       |          |          |   |
| Personality/behaviour | 0.26          | 0.21-0.31     | 39.39***         | 82.23                 | 6214     | 8        | 1, 3, 11, 13, 14, 23, 24                    |
| Published             | 0.26          | 0.20-0.32     | 6.18             | 67.65                 | 4298     | 3        | 1, 3, 14                                    |
| Not published         | 0.28          | 0.18-0.37     | 33.10***         | 87.91                 | 1916     | 5        | 11, 13, 23, 24                              |
|                       |               |               | <i>Q Between</i> | 0.11                  |          |          |   |
| Attitudes/orientation | 0.34          | 0.31-0.36     | 53.81***         | 79.56                 | 28009    | 12       | 1, 2, 3, 11, 11, 13, 14, 16, 19, 21, 23, 24 |
| Published             | 0.35          | 0.32-0.37     | 21.97***         | 81.79                 | 25662    | 5        | 1, 2, 3, 14, 19                             |
| Not published         | 0.24          | 0.16-0.32     | 26.09***         | 77.00                 | 2347     | 7        | 11, 13, 16, 21, 23, 24                      |
|                       |               |               | <i>Q Between</i> | 5.75*                 |          |          |   |
| YLS/CMI total score   | 0.53          | 0.49-0.58     | 39.18***         | 71.92                 | 7462     | 12       | 1, 3, 6, 8, 9, 11, 13, 14, 16, 21, 23, 24   |
| Published             | 0.51          | 0.45-0.58     | 6.22             | 51.79                 | 4437     | 4        | 1, 3, 14, 16                                |
| Not published         | 0.56          | 0.48-0.63     | 32.16***         | 78.24                 | 3025     | 8        | 6, 9, 11, 13, 21, 23, 24                    |
|                       |               |               | <i>Q Between</i> | 0.80                  |          |          |   |

*Note.* Positive *d* values indicate the effect size is larger among the recidivists compared with the non-recidivists. *d* = Cohen's *d* measure of effect size. *Q* = Cochran's *Q* to measure variability across studies. *I*<sup>2</sup> = measures the effect size for the variability in *Q*; heuristics for interpretation of *I*<sup>2</sup> variability – 25% (low), 50% (moderate), and 75% (high). *N* = number of participants in the analysis. *k* = number of studies in the analysis. *Q Between* = is the difference in the variability between levels of the moderator or the proportion of the overall variability that is explained by the moderator. \* *p* < .05, \*\* *p* < 0.01, \*\*\* *p* < .001

### **Study Summary and Conclusions**

This study explored the risk and strength factors predictive of recidivism for female and male justice-involved youth. Risk factors conceptualized and studied in the research literature were included at the global domain level and the individual indicator level for risk factors. Strength factors were only studied at the global domain level because sufficient primary studies are not yet available to contribute to the average effect at the individual indicator level. The meta-analysis in this chapter is an important contribution to the field because it provides an updated and comprehensive state of the literature with respect to both risk and strength factors predictive of recidivism among youth. Importantly the methodological approach is significant in two ways – first, the inclusion of studies that disaggregated results by females and males allowed for a more precise estimation of the aggregate effect size by taking into consideration between group differences which can impact the precision of effect size estimates in studies that report on only one gender (Borenstein et al., 2009). As a result of the approach to include both males and females, effect size estimates are both more precise and allow for statements to be made regarding gender neutrality (equally predictive for both genders), gender saliency (predictive for both genders however the effect is larger for one gender over the other), and gender specificity (predictive for one gender and not the other) of the risk and strength factors. Second, to address a gap in the literature to date, the study captured the elements of both risk and strength which was not studied in previous meta-analytic work that focused on risk factors only. Some interesting findings led to conclusions regarding gender neutrality, gender saliency, and gender specificity of the risk and strength factors. Recall the following classification rules re: gender neutrality, gender saliency, gender

specificity, and no effect for either gender (nil effect):

- Gender neutral factors: significantly predictive for both males and females (confidence intervals did not contain zero in the first set of meta-analytic results that examined effects separately by gender) *and* the calculated Cohen's *d* difference score was not significantly different than zero (suggesting a non significant difference in the magnitude between females and males)
- Gender salient factors: significantly predictive for both males and females (confidence intervals did not contain zero in the first set of meta-analytic results that examined effects separately by gender) *and* the calculated Cohen's *d* difference score was significantly different than zero indicative of a significantly larger effect for one gender over the other
- Gender specific factors: significantly predictive for one *or* the other gender (confidence intervals did not contain zero for one gender, but did contain zero for the other gender in the first set of meta-analytic results that examined effects separately by gender)
- Nil effect for both genders: did not significantly predict for either males *or* females (confidence intervals contained zero in the first set of meta-analytic results that examined effects separately by gender); Cohen's *d* mean difference scores were irrelevant.

### **Overview of Key Findings**

**Risk factors and gender.** The first research question was concerned with the identification of risk factors predictive of general recidivism among male and female

youth and whether there was any indication for gender neutrality, gender saliency, and gender specificity among the risk factors, at both the domain and individual indicator level. It was hypothesized that the following global domain level risk factors: (1) criminal behaviour, (2) antisocial personality, (3) antisocial attitudes, (4) antisocial peer relations, (5) problematic family circumstances and parenting, (6) education/employment problems, and (7) poor use of leisure time would be significant predictors for both males and females equally (i.e., gender neutral). This hypothesis was largely supported with the exception of the criminal history and the poor use of leisure/recreation time; both of these domains emerged as gender specific risk domains for the males only. Previous meta-analytic work has found that the global risk domains of criminal history (Cottle et al., 2001; Green, 2006; Olver et al., 2014; Simourd & Andrews, 1994) and poor use of leisure/recreation time (Cottle et al., 2001; Olver et al., 2014) predict recidivism equally well for both males and females. Criminal history and leisure recreation have never been the focus among gender responsive scholars and the lack of predictive significance in this meta-analysis (among females) would appear to support gender responsive scholar's lack of interest in these domains. However, a more reasonable conclusion would be that there is a need for more primary studies to measure this construct among both males and females to offer more definitive conclusions on their relevance by gender.

The second hypothesis predicted that the global risk domains of substance abuse, child abuse, and mental health would emerge as gender salient (i.e., predictive for both males and females however would be significantly larger for females). The findings of the meta-analysis did not support this hypothesis. First, substance abuse emerged as a significant predictor (a small effect) for both males and females and as such was

determined to be gender neutral. This finding was somewhat surprising given the attention substance abuse has received from gender responsive scholars and the pathways theory of crime that indicates the significance of substance abuse in the lives of women and girls (Belknap, 2015; Bloom et al., 2003; Lynch et al., 2017; Salisbury & Van Voorhis, 2009; Salisbury et al., 2009). Empirical research has also established the potential for substance abuse as a salient predictor for females (Andrews et al., 2012; Olver et al., 2014). It is interesting to note that at the individual indicator level of the risk factors, there were some notable differences between the genders within the substance abuse domain. Specifically, chronic alcohol use was determined to be gender salient for females (i.e., larger magnitude for females) and chronic drug use was salient for the males (i.e., larger magnitude for males). This suggests that there may be important differences at the level of the individual indicator that would be missed if gender neutrality was to be accepted at the overall global domain level. The evidence for gender differences at the level of the indicators should be considered as preliminary given there were only 3 studies that contributed to the overall effect, thus further primary research would serve to contribute more definitive conclusions regarding the saliency of the indicators at the individual level.

Contrary to the hypotheses, mental health and child abuse were not significant predictors at the domain level. There are two possibilities that could contribute to this finding. First, the mental health domain was too broad. The individual indicators that contributed to the mental health domain simply measured whether or not there was a significant mental health problem without signaling the type or magnitude of the problem. Gender responsive scholars in particular posit that there are gender differences

in the types of mental health between males and females (Bloom et al., 2003; Salisbury, 2016; Salisbury & Van Voorhis, 2009). A broad category such as this is unable to distinguish between the type of mental health experience and may fail to capture the uniqueness of the experience for females (i.e., internalizing mental health issues such as depression and anxiety (Bloom et al., 2003; Salisbury, 2016; Salisbury & Van Voorhis, 2009). Second is the possibility that mental health is a need for females that requires attention however, the need does not translate to a risk (Hannah-Moffat, 2009; Salisbury & Van Voorhis, 2009). Van Voorhis et al. (2010) comment that some mental health issues may be linked to recidivism, however some may not. Accordingly, care must be taken when incorporating factors such as mental health into risk assessment tools because if factors are not properly understood, there is a risk that assessments will overclassify (or penalize) women and girls for having needs relating to factors such as mental health and child abuse (Salisbury et al., 2009).

Further, at the domain level, child abuse was not specifically predictive of recidivism for males or females however at the individual indicator level child maltreatment/neglect and physical abuse were significantly predictive (albeit small effects) for both males and females. The Cohen's *d* difference score did not find that the difference for these effects were significantly different than zero indicating child abuse/neglect and physical abuse are gender neutral predictors of recidivism. Further research is needed to explore the effect of child abuse on recidivism, particularly if the experience of child abuse is influencing other behaviours (i.e., substance abuse) that contribute to criminal behaviour and recidivism or if it exists as a direct effect.

The third hypothesis predicted that the individual indicators of: history of running

way, out of home placements, and unstable living arrangements would be female specific based on suppositions from theory and primary research (Bloom et al., 2003; Brown & Motiuk, 2005; Chesney-Lind & Merlo, 2015; Kempf-Leonard & Sample, 2000; Salisbury et al., 2009). Contrary to the hypothesis, history of running away was equally predictive for both males and females (i.e., gender neutral) and unstable living arrangements was not significantly predictive for either gender. For living arrangements in particular, it is possible that this factor was captured from the three studies that contributed effects for this item however were not capturing the essence of the item as conceptualized from the gender responsive perspective. Specifically, unstable living arrangements was defined as including no permanent address or kicked out of the home; however the emphasis by gender responsive scholars is focused more on housing safety (Bloom et al., 2003; Salisbury et al., 2009). The individual risk factor of out of home placements however was determined to be a female specific factor (i.e., not predictive for males). Perhaps being unable to stay within the family unit is reflective of dysfunctional relationships within the familial home and is a proxy for the level of dysfunction that is a posited risk factor from the gender responsive perspective; Belknap, 2015; Bloom et al., 2003).

**Strength factors and gender.** The focus of the second research question was to determine what strength factors could predict success (i.e., no recidivism) among justice-involved youth and if determinations of gender neutrality, gender saliency, and gender specificity could be made. Though the strengths could only be analyzed at the domain level, preliminary support emerged for the strength domains as gender neutral, gender salient, and gender specific.

Of the seven global strength domains, one was determined to be gender neutral

(i.e., equally predictive for males and females; prosocial peer relations), one was gender salient (i.e., predictive for both males and females but stronger in magnitude for males; rejection or absence of substance abuse), one was female specific (i.e., predictive for females and not males; prosocial values and attitudes) and two were male specific (i.e., predictive for males and not females; family relationships and support, education and employment opportunities. Only one of the strength domains included in the meta-analysis was not significantly predictive for either males or females, the extra-curricular activities and community support. There was no specific directionality hypothesized regarding strength factors, however based on research that has emerged in recent years (Farrington, 2013; Jones et al., 2015, 2016; Van Voorhis, 2013), it was reasonable to expect that the overall domains of family relationships and support, education/employment opportunities, prosocial peer relations, and prosocial values and attitudes would emerge as meaningful strength factors, which was found in the results of this study. As more primary research becomes available an analysis at the individual indicator level will be crucial to achieve a better understanding of the important strength factors that predict success (i.e., no recidivism) as well as any further conclusions regarding gender differences.

### **Implications for Theory**

**Evidence for a gender informed theory of crime.** The results of this study provide support for a gender informed perspective on crime. Briefly, a gender informed theory incorporates elements from both the gender neutral and gender responsive theories and emphasizes the importance of factors such substance abuse, trauma and/or victimization, poor mental health, and unhealthy relationships, low self-worth, economic

marginalization/poverty, parental stress, unsafe living situations, and female specific health needs (Blanchette & Brown, 2006; Bloom et al., 2003; Gobeil et al., 2016; Salisbury & Van Voorhis, 2009; Van Voorhis, 2012) in addition to the *Central Eight* posited by the gender neutral theory (Bonta, & Andrews, 2017). From a gender informed perspective, it is understood that there are key risk factors that may be the same for both males and females but also that the underlying expression and experience of the factors could be very different. A gender informed theory assumes that the contributions from the gender neutral and gender responsive perspective both have merit (Blanchette & Brown, 2006). The findings that emerged provide evidence that the overall global risk domains as posited from a gender neutral theory of crime (i.e., the *Central Eight*, Bonta & Andrews, 2017) are equally predictive for both males and females, in support of the gender neutral model with two notable exceptions (criminal history and leisure/recreation that require further investigation). However, the results of the meta-analysis were able to demonstrate gender saliency and gender specificity among the risk (at the item level in particular) and strength factors providing evidence that accepting neutrality at the domain level will result in missed opportunities if further consideration for the individual factors within overall domain constructs are not sufficiently explored. (Salisbury, 2016).

The inclusion of strengths in the meta-analysis was also important because the gender informed framework is not only about addressing recidivism risk, but also about strengthening positive relationships, well-being, and empowerment (Hannah-Moffat, 2009; Van Voorhis, 2012). Although the results of the strengths are limited to the overall global strength domain (and not at the individual indicator level), some important gender differences did emerge providing evidence of gender saliency and specificity. In

particular, the prosocial values and attitudes was a large, specific effect for the females. There has not been a lot of primary studies that have explicitly measured strength factors, nor have there been many that disaggregate the results by gender, thus the evidence to situate this finding is relatively sparse. Prosocial values and attitudes was coded from three studies that measured strengths of the *Central Eight* dichotomously (i.e., attitudes is present as a strength) from the YLS/CMI assessment (Cuervo & Villanueva, 2014; Flores, Travis, & Latessa, 2004; Shepherd, Leubbers, Ogloff, Fullam, & Dolan, 2014) which suggests a significant contribution from the gender neutral theory. Other plausible strength factors identified from the gender responsive camp such as self-efficacy and self-esteem were not included because there are insufficient studies that have conceptualized and measured these constructs as strengths. Further primary research is thus recommended.

Overall, the results of this study are in the same direction with the meta-analytic review conducted by Green (2006) and Olver et al. (2014) who found evidence of gender similarity at the domain level, but also some evidence for gender differences. Taken as a whole, there is evidence of gender similarity (i.e., gender neutrality) at both the domain and indicator level in line with the gender similarities hypothesis put forward by Hyde (2005; 2014). Of the global risk domains, six of the ten domains (60%) emerged as gender neutral and of the individual risk indicators, 12 of 35 (34.3%) emerged as gender neutral.

**Evidence for the gender similarities hypothesis?** In 2005 and then again in 2014, Hyde posited that “males and females are similar on most, but not all, psychological variables...men and women, as well as boys and girls, are more alike than

they are different” (p. 581). The results of the meta-analyzed effects provide some evidence of gender similarity at the domain level that align with this hypothesis – 60% of the risk domains were not significantly different for males and females; the remaining domains, criminal history and poor use leisure/recreation time were male specific, and mental health and child abuse were not significant for either gender as predictors of general recidivism. When the global level domains were broken down into their individual indicators, however some preliminary evidence for gender differences emerged. Of the total individual risk indicators, a total of four (11.4%) were gender salient – females (three indicators) and males (1 indicator). A total of 12 (34.3%) individual risk indicators emerged as gender specific – females (3 indicators) and males (9 indicators). Of the total number of individual risk indicators, gender differences emerged (i.e., as gender salient or gender specific) for just under half of the included indicators, 45.7% (16 risk indicators). Twelve risk indicators were found to be gender neutral (34.3%; equally predictive for both males and females) and a further 7 (20.0%) were not significant for either gender. From this study, it can be concluded that although there is evidence of gender neutrality at the domain level, there are important gender differences at the level of the indicators that warrants further attention. Clearly, further primary research is needed at the indicator level to confirm and support the evidence of gender differences. For now, acceptance of where females are similar and where they are different from their male counterparts (Salisbury, 2016) will be needed to reconcile differences in the determination of an overall model for prevention and intervention; efforts will need to be conceptualized and appropriately quantified (Van Voorhis, 2012). Evidence for significant differences between males and females when overall constructs

(i.e., domains) are broken down to the level of the individual indicators means that failure to consider gender differences in models of risk assessment and intervention will not be able to sufficiently capture the uniqueness warranted for females.

### **Implications for Practice**

**Moving beyond prediction and into real-world practice – where to go from here.** The results of this research do not provide overwhelming evidence of complete assimilation of genders (i.e., gender similarities hypothesis) but also does not provide overwhelming evidence in favour of males and females requiring completely distinct applications of risk assessment and management. The focus on the *Central Eight* predictors of crime conceptualized from the gender neutral model has merit for both males and females. But what about gender differences? From this research, some of the hypothesized gender differences emerged as significant, but what about the indicators that were not significant (i.e., mental health)? In real-world practice, does significance matter?

Proponents of the gender responsive approach advocate that the interconnection of mental health, substance abuse, relationship dysfunction, and re-victimization is vitally important in the lives of women and girls (Bloom et al., 2003; Brenman et al., 2008; Chesney-Lind & Shelden, 2004; Johansson & Kempf-Leonard, 2009; McClellan et al., 1997; Salisbury & Van Voorhis, 2009). In practice, this means that not all female specific needs can be automatically translated into a risk that needs to be managed (Bloom et al., 2003; Maurutto & Hannah-Moffat, 2007; Van Voorhis & Presser, 2001). Importantly, the line between risk factors and need factors may not always be clear and can result in over classification if need factors are automatically assumed to increase a woman's (or girl's)

risk (Van Voorhis & Presser, 2001). As discussed, further research is needed to conceptualize the construct of mental health and the relevance of mental health as a risk and/or a need factor for women and girls (Hannah-Moffat, 2009; Salisbury & Van Voorhis, 2009; Van Voorhis et al., 2010). More research is needed to validate the importance of gender responsive factors and the role they can play in tailoring intervention and management strategies to women and girls.

**Responsivity revisited.** As defined by the responsivity principle (Bonta & Andrews, 2017), *specific* responsivity aims to address individual characteristics (e.g., age, gender, race), learning style, and motivation of individuals in the provision of intervention services to offenders. But is it also possible that factors posited by gender responsive scholars, such as mental health, childhood abuse, problems with self-esteem and self-efficacy could be addressed through specific responsivity. An argument for the need to address these “minor” factors could be made so that the individual can more fully engage in intervention efforts to target established criminogenic needs, once these minor factors are addressed (Rettinger & Andrews, 2010). For example, an individual currently experiencing parental stress and unstable accommodation would arguably be unable to focus and fully engage in treatment aimed at targeting antisocial attitudes, if the “lower level needs” (parental stress and unstable accommodation) are not first addressed. There is merit for the consideration of the impact these lower level needs would have on an individual’s propensity to engage in criminal conduct and so would need to be addressed in practice; future research efforts could measure the impact of such indicators as indirect versus direct effects and determine their contribution as an indirect predictor of desired outcome. Strength factors can also play a significant role here, because if a practitioner is

able to build upon individual strengths to foster reductions in recidivism and improve quality of life, this accomplishes the goals of effective intervention from a gender responsive perspective (Bloom et al., 2003).

Collectively, this study provides evidence in support of well-established risk factors (i.e., the *Central Eight*), as well as preliminary evidence for the contribution that strength factors can provide in the assessment of risk. Caution however in the interpretation of results is warranted by the limitations of the study.

### **Limitations**

**Small number of studies.** This meta-analysis was an attempt to aggregate available research conducted to date on predictors of recidivism among justice-involved youth. Although there was sufficient information available to run the desired analyses, apart from in-depth moderator analysis, more research is needed that includes sufficient female, as well as male participants to enable further gender comparisons. As evidenced in the results provided, many of the effect sizes were generated on a small number of studies, which can be unstable and easily influenced by the presence of outliers. An attempt to limit the influence of outliers was made by removing studies that met the following 3 criteria – following Hanson’s Rule (Hanson & Bussière, 1998): 1) the effect size was the most extreme value (positive or negative); 2) the effect accounted for more than 50% of the variance; and 3) the overall  $Q$  was significant. To be considered an outlier (and subsequently removed), all 3 criteria had to be met.

As indicated, the number of studies affects the estimate of the effect size, because the heterogeneity is built into the calculation of the effect size in the random effects model. With fewer studies, power to detect heterogeneity is thus limited (Borenstein et

al., 2009). Relatedly, and demonstrated throughout the results, the confidence intervals for the aggregate effect sizes were very wide. Though technically the minimum number of studies to run a meta-analysis is 3, with fewer studies the resulting calculations can be too imprecise for concrete measurement, and limit the ability to detect variability and achieve smaller confidence intervals. As the goal of the study was to determine an average estimate of where the field stands to date, the study accomplished its goals, albeit with limitations, and provides preliminary indications of the average effects until further primary research can be conducted.

Importantly, as the aggregation of studies to determine effect size is a function of sample size, meta-analytic techniques may discriminate against females because the sample sizes are naturally smaller. In 2008, Salekin concludes that gender analysis is not often possible because the number of female youth included in heterogeneous young offender samples only include a small number of females. Given the number of studies that met the inclusion criteria and had enough female participants to enable the calculation of an effect size for both groups, the problem of small numbers can be noted as a significant limitation with respect to conclusive statements on gender similarity or gender differences. Thus, as discussed the findings need to be considered in the context of what is meaningful, rather than relying solely on what is significant.

**Moderator analysis.** An important component of meta-analysis is the ability to quantify the averaged effects with respect to the influence of moderators. The small number of studies, as well as the coding of moderator variables from the included studies was not reliable. As such items dropped for further analysis included level of risk of samples, case status, and study type which were elected as potential variables for

moderator analysis. Other variables that were considered possible moderators were sample ethnic status and age. Research suggests that there may be differences in important risk and strength factors by age as a function of development and transition in adolescence. Unfortunately, there was insufficient data reported within the included studies, as well a limited number of studies available, thus examining the stability of factors across adolescence was beyond the scope of this investigation. Developmental differences in pertinent risk and strength factors across age and gender would be worthy of further study (Douglas & Kropp, 2002; Olver et al., 2009).

With respect to ethnicity, a great deal of research examines differences within this context and is identified as necessary in studies seeking to determine gender differences (Hyde, 2014). Hyde discusses the importance of intersectionality, which is an approach that considers differences in the context of race, class, sexual orientation, disability, and/or religion. In other words, gender differences need to be considered in the context of such influences, rather than examining effects in isolation, which based on the availability of data reported within the included studies, was beyond the scope of this project, however an important consideration for future research to address. In addition, further empirical evidence and consideration will need to be made for different expressions of gender (i.e., transgender) as well as differences within gender. Having focused a great deal of attention on differences between males and females, it would be negligent to not also explore whether important within gender differences exist.

The central theme to the limitations of this study calls for more primary research to extend the results of the current meta-analysis. These studies should include a sufficient number of females for meaningful analysis and be disaggregated by gender so

important conclusions regarding gender differences can be made. As the literature is saturated with research on risk factors, more emphasis should also be placed on identifying important strength factors (at both the domain and indicator level) as well as determining the evidence for gender neutrality, specificity, and/or saliency of strengths.

### **Conclusion**

Importantly, proponents of a gender-responsive approach posit that although reductions in recidivism (and delinquency) are important, it should not overshadow other important goals in working with women and girls and this is where gender differences can play an integral role (Bloom et al., 2003; Hannah-Moffat, 2009; Van Voorhis, 2012; Van Voorhis et al., 2010; Wright et al., 2012). Specifically, there may be important risk factors with direct links to recidivism, but working from a holistic approach as advocated by gender-responsive scholars, addressing additional salient risk factors, as well as strength factors to promote empowerment and increased quality of life are equally important goals of prevention and intervention efforts (Hubbard & Matthews, 2008). Attempting to predict human behaviour is a challenging task and no model is ever going to predict with complete accuracy and allow for statements to be made with absolute certainty (Hannah-Moffat & Maurutto, 2003), however it does not mean that efforts to improve existing models should not be made. Clearly more research is needed with females and males alike to test the accuracy of gender informed factors articulated from both the gender neutral and gender responsive approach. As such, this requires more empirical-based evidence with gender informed factors to draw definitive conclusions on how best to approach work with women and girls, that captures important similarities when possible and differences where needed (Salisbury, 2016).

### **Chapter 3: Empirical Validation of a Gender-Informed Risk Assessment Tool: The Youth Assessment Screening Instrument (YASI)**

#### **Abstract**

In recent years, sufficient evidence has emerged indicating that gender should, and does matter in offender assessment and intervention. Given the significance to the lives of those most impacted, fair and reliable risk assessment is an important task for effective corrections. Consequently, this study examines the predictive validity of two models of the Youth Assessment and Screening Instrument (YASI, Orbis Partners, 2000), the original model and a gender informed version (YASI-GI; Orbis Partners, 2011) in a sample of 254 justice-involved youth from central and eastern Ontario. Two-year fixed recidivism data (general and violent) was coded from the Ministry of Community Safety and Correctional Services and from Canadian Police and Information Centre (CPIC) records. Overall, 57.5% of the sample had a new general recidivism event within the 2-year fixed follow up and 40.9% recidivated violently. Predictive validity was assessed via bivariate prediction, logistic regression, and receiver operator characteristic (*ROC*) analyses. The overall predictive accuracy of both models (YASI and YASI-GI) in both formats (pre-screen and full assessment) was found to be moderately predictive ( $.63 < AUC < .71$ ) of general recidivism and violent recidivism, consistent with previous empirical work that has been conducted by the scale developers (Jones, 2011; Jones et al., 2016; Orbis Partners, 2007a). Across all instruments and recidivism type, a linear relationship was demonstrated for both males and females; as the total risk score increased, the predicted probability (or observed rate) of recidivism also increased indicative of good calibration at the global (i.e., total scores) level. As hypothesized, the

YASI and YASI-GI demonstrated good convergent validity with other established risk assessment scales – the YLS/CMI and PCL:YV. Overall, large correlations ( $r > .37$ ; Rice & Harris, 2005) were observed between the YASI/YASI-GI domains of the full assessment and the corresponding domains of the YLS/CMI and four factors of the PCL:YV, as expected. In general, there was no specificity or saliency for strengths for females at the domain level however some factors (family history, social networks, attitudes, social/cognitive skills, employment and free time, and violence and aggression) were significantly predictive of success (no recidivism) for males and were considered to be male specific. Limitations of the small sample size and generalizability of results are discussed. In general, the results of the domain level analysis suggest that further conceptualization and refinement of domains as strengths, including a review of individual items to be included is warranted. Together the results provide evidence in support of a gender informed risk assessment that consists of important items posited from both a gender neutral and a gender responsive approach.

### **Introduction**

In the context of the criminal justice system, historically little attention has been placed on women and girls. Traditionally, assessment and intervention protocols have largely been developed on samples of males and applied with no regard for their female counterparts. Gender responsive scholars have vehemently underscored the inadequacies of this approach and as a result, increased attention has been placed on developing best practices in corrections to ensure unique considerations based on gender are not dismissed (Hannah-Moffat, 2009; Van Voorhis, 2012). Further, being able to reliably and fairly identify who is likely to reoffend has significant implications for security classification (based on the principle of least restrictive measures), resource planning (for management and intervention), and protection of the public, and as such needs to reflect a valid and reliable approach for both males and females. In the realm of risk assessment, female focused research has grown steadily including the development of risk assessment built specifically for women, including the Women's Risk Needs Assessment (WRNA; Van Voorhis, Salisbury, Wright, & Bauman, 2008) a stand-alone risk assessment comprised of both gender neutral and gender responsive items, as well as the Service Planning Inventory for Women (SPIn-W; Orbis Partners, 2007) a gender responsive risk-needs-strengths assessment tool built from the ground up for females that incorporates items relevant to women's experiences (child custody and parenting, relationship and interpersonal skills). A risk assessment to measure risk among justice-involved youth that incorporates items from both the gender neutral and gender responsive perspectives has also been developed, the Youth Assessment Screening Instrument (YASI; Orbis Partners, 2000) that will be described in more detail following the discussion on the evolution of

risk assessment. Of the studies conducted to date testing these models as predictive instruments are demonstrating promising psychometric properties indicating these tools as valid for use with women and girls.

For the YASI in particular, research on the tool has been conducted by the scale developers (Jones et al., 2016; Orbis Partners, 2007a) however to date, an independent validation study has not been conducted. Further, the incremental validity of incorporating hypothesized female specific items into the YASI assessment framework has not been determined. As such, the goal of the current study was to 1) conduct a validation study to evaluate the reliability and validity of the YASI assessment model as an independent researcher, 2) test a model of the YASI that includes hypothesized gender responsive items – the YASI-Gender Informed (GI), and 3) measure the ability of strength factors to predict success (i.e., no recidivism) and whether or not strengths can add incrementally above and beyond risk factors.

### **Evolution of Risk Assessment**

Given the serious consequences of decisions based on the risk of harm (Hanson, 2009) and the profound impact for those involved (Brown et al., 2017), risk assessment practices must be based on sound empirical evidence. Importantly, risk assessment has developed over time, into more than the just a determination of risk; risk assessment has also become about identifying important intervention targets to guide and monitor progress in treatment, resulting in a more effective use of scarce resources (Clements, 1996; Mills, 2017). In 1996, Bonta reviewed the field of risk assessment and provided an overview of three generations of risk assessment that existed up to that point: clinical/professional judgment (1<sup>st</sup> generation), actuarial assessment (2<sup>nd</sup> generation), and

risk-needs assessment (3<sup>rd</sup> generation).

*1<sup>st</sup> generation.* First generation risk assessment is also known as subjective assessment, professional judgment, intuition, or “gut-level” feeling (Bonta, 1996); 1<sup>st</sup> generation assessments are not standardized and are based on the collection of information and interpretation at the discretion of the professional rendering the judgment. The decision maker not only decides what information to consider but how that information should be weighted. Criticized for being subjective and non-replicable, 2<sup>nd</sup> generation risk assessments were developed as a solution.

*2<sup>nd</sup> generation.* One of the first attempts to classify individuals through an objective prediction method was through the use of prediction tables (Burgess, 1928). The theory behind prediction tables was that particular factors such as previous criminal record, previous work record, marital status, and conduct in the institution (see Burgess, 1936 for a complete list), could predict crime. Scored as 1— “Present” and 0— “No”, items are summed for a total ‘risk’ score (a linear additive model; Gottfredson & Moriarty, 2006), with higher scores indicating higher likelihood of failure on parole <sup>14</sup>. Also referred to as actuarial risk assessment, 2<sup>nd</sup> generation models are comprised of items based on their empirical association with recidivism (primarily static items; Brown et al., 2017). Unlike the 1<sup>st</sup> generation (i.e., professional judgement) where the clinician decided what factors to consider in the assessment of risk, 2<sup>nd</sup> generation methods prescribe what factors are to be considered and how the factors should be weighed. The primary drawback to the actuarial method was the reliance on static (or unchangeable)

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<sup>14</sup> Now, this dichotomous rating of variables is commonly referred to as the Burgess method.

factors, which only allowed for the assessment of risk, and could not provide any indication of treatment to lower risk (Bonta, 1996). In response to the need for direction on how to effect offender change (i.e., reduce recidivism) beyond static risk came the development of the 3<sup>rd</sup> generation risk assessments.

*3rd generation.* Third generation risk assessments are not only capable of estimating the level of risk, they are also capable of identifying treatment targets that when changed, are associated with reductions in risk (e.g., recidivism), because of the dynamic nature of the risk predictors (Bonta, 1996). A well-known and widely used 3<sup>rd</sup> generation risk-needs assessment is the Level of Supervision Inventory-Revised (LSI-R; Andrews & Bonta, 1995a) or a variant of the LSI-R adapted for jurisdictions (e.g., LSI-OR – Ontario Revised; Andrews, Bonta, & Wormith, 1995) or youth (Youth Level of Service/Case Management Inventory – YLS/CMI; Hoge & Andrews, 2002).

There is significant evidence to suggest that the predictive ability increases with each successive generation, with the 3<sup>rd</sup> generation not only capable of indicating risk, but also of identifying treatment targets (Bonta & Andrews, 2017). Importantly, the inclusion of strength factors as a consideration in risk assessment is seen within the LSI-R and YLS/CMI assessment scales (Andrews, Bonta, & Wormith, 2004), though strength factors are not integrated into the final estimate of risk (Andrews & Bonta, 1995; Hoge & Andrews, 2002). Prominent researchers continue to push the field forward to the development of the next generation of risk assessment (4<sup>th</sup> generation) to incorporate an indication of risk, identify treatment targets, allow for the re-assessment of risk and acute factors that signal preventative action, and the inclusion of strengths that can be integrated into estimates of risk.

*4th generation.* An example of a 4<sup>th</sup> generation risk assessment is the Youth Assessment and Screening Instrument (YASI; Orbis Partners 2000). The YASI is a modified version of the Washington Juvenile Risk Assessment Instrument (WJRAI; Washington State Institute for Public Policy, 1999) that combines risk, need, and strength factors to assess and re-assess these domains as part of case-management planning and provision for youth clients (Orbis Partners, n.d.a).

Outside of these successive generations of risk assessment, there are others who approach risk assessment grounded in professional judgment. Attempts to improve clinical judgement has been made by providing a structured approach that specifies the important elements to consider in rendering assessment decisions, all the while maintaining professional discretion in the decision making process. This approach is referred to as Structured Professional Judgement (SPJ).

*Structured professional judgement.* An SPJ approach to risk assessment leaves the overall judgement of risk level to the professional, however specifies the items to consider in advance (Hanson, 2009). Unlike the actuarial models that direct the professional on how risk factors are to be combined to obtain a total score, the SPJ approach directs evaluators on which factors to consider (that are based on past theory and/or research), but does not encourage the summation of items into an overall total score. Thus, the clinician determines which factors should carry more (or less) weight in the overall determination of risk, expressed as “low”, “moderate”, or “high” (Hanson, 2009). In this way, SPJ makes use of the advantages of both unstructured clinical judgment (flexible, idiographic) and the actuarial approach (objective, consistent) because it allows for the consideration of individual and contextual factors that can

respond to any responsivity and sensitivity elements of an individual case, while also incorporating empirically validated and operationalized risk factors (Douglas & Reeves, 2010).

A well-known SPJ assessment is the Historical, Clinical, Risk Management – 20 (HCR-20; Webster, Douglas, Eaves, & Hart, 1997). The HCR-20 incorporates the scoring of pertinent risk factors with clinical judgment to integrate the factors and assign an overall level of risk (low, moderate, or high); the availability of the clinical override in the assessment of risk using the HCR-20 allows the professional to attach greater significance to any one risk factor (Mills, Kroner, & Hemmati, 2007). An example of an SPJ approach that has been used to assess violence among youth is the Structured Assessment of Violence Risk in Youth (SAVRY; Borum et al., 2006).

A novel feature of the SAVRY is the inclusion of strength factors; it is one of the first standardized assessment tools to include both risk and strength factors associated with violence (Lodewijks et al., 2010). Among three samples of known violent male offenders with average ages between 14 and 17, Lodewijks et al. (2010) found the protective scale of this risk assessment significantly increased the predictive accuracy beyond that of using the dynamic risk scale alone.

### **Is There a Superior Method and Why It Matters**

There continues to be debate over the superiority of one method over the other. Hanson and Morton-Bourgon (2009) propose a five-category classification of risk tools: 1) *empirical actuarial* are assessments that contain explicitly defined variables based on empirical evidence and explicit rules for combining the items into a total risk that is linked to expected recidivism rates; 2) *mechanical tools* include explicitly stated items

determined in advance and provide methods for combining the items into a total score however, the selection of items is based on theory or literature review (i.e., it is not validated); the total scores of mechanical tools are not linked to recidivism probabilities; 3) *adjusted actuarial* tools are assessments based on an actuarial or mechanical model, however a professional can adjust scores based on factors deemed relevant for the case (note these override variables are not specified in advance); 4) *structured professional judgement*, as described above; and 5) *unstructured tools* which are akin to unstructured clinical judgements or 1<sup>st</sup> generation assessments labeled by Bonta (1996). Although attempts to evaluate the accuracy of these approaches (both generational models and Hanson's proposed five category models) have been conducted, consensus on the superiority of one model over the other has not been reached (Hanson, 2009) However, unstructured clinical approaches have repeatedly been shown to be the least reliable and valid (Hanson, 2009; Hanson & Morton-Bourgon, 2009; Mills, 2005).

Other attempts to reconcile the debate include Grove and Meehl (1996) and Grove, Zald, Lebow, Snitz, and Nelson (2000) who both reported better accuracy and claims of reproducibility in favour of the statistical method over clinical prediction. In 2006, Ægisdóttir et al. (2006) found an overall effect size of .12 favouring statistical prediction, and discussed the concern of rater bias. Specifically, they determined that clinicians were more accurate when they were making decisions on less familiar or "novel" information, suggesting knowledge of the subject area could introduce a potential bias in the prediction or decisions (Ægisdóttir et al., 2006). Mills (2017) highlights that debate ensues regarding the superiority of the SPJ approach over the actuarial approach (or vice versa) as many evaluations conducted to date incorrectly use the actuarial

method of combining risk factors into a total score for SPJ tools, which is contrary to the intention of the approach.

The evolution of risk assessment over time has seen the process move from simply being an assessment of risk, to becoming one of information gathering, identification of risk factors, estimating and communicating risk, identifying treatment/intervention targets (including strengths), and articulating strategies for risk management (Mills, 2017). What is missing from the discussion of risk assessment thus far, is how females have factored into the risk assessment process. Are instruments such as the family of LSI-R instruments or YASI valid risk assessment measures for women and girls or is there a need to start from the ground up and develop new assessments?

### **Evolution of Female Offender Risk Assessment**

As demonstrated in the section on theories of crime, the majority of research studying risk and strength factors, and risk assessment approaches has traditionally been based on work with males and remained relatively silent on females (Blanchette & Brown, 2006; Brown et al., 2017; Hannah-Moffat, 2009). Until more recently, the common approach for risk assessment with women and girls was based on classification systems for males or gender-neutral models (Blanchette & Brown, 2006). Van Voorhis and Presser (2001) report on a national assessment conducted across 50 states in the U.S. and determined that only 4 states at that time had a separate classification system for women (Idaho, New York, Massachusetts, and Ohio). A primary criticism of using tools developed and validated on males to assess women is the failure to address the female experience (Van Voorhis et al., 2008). Risk assessment approached from both a gender neutral and a gender responsive lens is discussed next along with the empirical evidence

that supports or disputes each approach. The identified gaps identified through this review of risk assessment with females can inform a way forward to improve classification systems for females.

**Female offender risk assessment through a gender neutral lens.** Proponents of a gender neutral approach assume the underpinnings of criminal behaviour operate the same regardless of gender, thus the factors posited to predict involvement in crime are the same for both males and females. The gender neutral approach has been criticized for overlooking females or assuming generalizability (Brown et al., 2017). More specifically, when it comes to risk assessment, the gender neutral model assumes that the predictability of an instrument developed for males will generalize to females (Daly & Chesney-Lind, 1998), and if there are specific factors that pertain to being female, these will be addressed through specific responsivity (Bonta & Andrews, 2017). As such, extensive empirical work has documented evidence of the well-known *Central Eight* (Bonta & Andrews, 2017) that comprise risk assessments such as the Level of Service instruments (LSI-R) and the YLS/CMI. The empirical research has established the validity of the LSI-R (Smith, Cullen, & Latessa, 2009) and YLS/CMI (Andrews et al., 2012; Olver et al., 2009; Schwalbe, 2008) with males in particular, however some research has also found significance for these tools among samples of females as well (Blanchette & Brown, 2006).

**Empirical evidence for YLS/CMI among samples of youth.** As previously discussed the YLS/CMI is a widely accepted 3<sup>rd</sup> generation risk assessment tool designed to assess adolescent offenders for recidivism risk and is comprised of the *Central Eight* risk factors – criminal history, family/parenting, education/employment, peer

relationships, substance abuse, leisure/recreation, and personality. A recent meta-analysis conducted by Olver and colleagues (2014) identified some of the gaps in the use of the Level of Service scales with females.

In the Olver et al. (2014) meta-analysis, a total of 128 studies conducted from 1981 to 2012 met the following inclusion criteria: 1) one version of the Level of Service (LS) scales was included in the study (LSI, LSI-R, LSI-R:SV, LSI Self Report, YLS/CMI, YLS/CMI:SV, LSI:SK, YO LSI, LSI-OR, and LS/CMI<sup>15</sup>), 2) the study included a measure of recidivism that occurred after a specified follow up period, and 3) sufficient information to calculate effect size (point biserial  $r$ ) was included. The overall breakdown of gender reported from the authors confirmed the paucity of studies examining the LS scales with females – males comprised 80.5% of the sample and females comprised 19.5% (Olver et al., 2014). For the sample overall (i.e., both males and females combined), the LS total scores were moderately predictive of general recidivism ( $r = .29$ ) and violent recidivism ( $r = .23$ ). When disaggregated across gender, the LS scales were predictive of general recidivism ( $r = .31$  and  $r = .30$ ) and violent recidivism ( $r = .26$  and  $r = .24$ ), for the females and males respectively. At the domain level, across both genders Olver et al. (2014) found that criminal history, antisocial associates, antisocial personality, and antisocial attitudes were the strongest predictors for

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<sup>15</sup> LSI = Level of Service Inventory (Andrews, 1982); LSI-R = Level of Service Inventory – Revised (Andrews & Bonta, 1995a); LSI-R:SV = Level of Service Inventory – Revised: Screening Version (Andrews & Bonta, 1995b); YLS/CMI = Youth Level of Service Case Management Inventory (Hoge & Andrews, 2003); LSI:SK = Level of Service Inventory – Saskatchewan Youth Edition (Andrews, Bonta, & Wormith, 2001); LSI-OR = Level of Service – Ontario Revision (Andrews, Bonta, & Wormith, 1995); and LS/CMI = Level of Service/Case Management Inventory (Andrews, Bonta, & Wormith, 2004).

both general and violent recidivism ( $r = .19$  or greater). Correlations for violent recidivism were in a similar direction but smaller effects were reported for both males and females across the domains, though criminal history, antisocial associates, antisocial personality, and antisocial attitudes were among the strongest predictors. For evidence of gender differences, Olver et al. (2014) conclude that substance abuse and the personal/emotional domain emerged as significantly predictive of general recidivism for females and were significantly different than males based on non-overlapping confidence intervals. An important limitation of these findings is an inability to statistically test for gender differences (i.e., through the use of a difference score) because the samples included were not required to be disaggregated by gender (i.e., providing a separate effect size for each gender within the study). Thus, it could be argued that the conclusions around gender differences are preliminary and further research that disaggregates the results by gender to statistically measure the differences in the magnitude of the effect is warranted. As discussed in the meta-analysis presented in Chapter 2, studies that disaggregate the results by gender and provide an effect size for each indicator within the same study (by gender) removes or accounts for any between group differences and was determined to be a superior methodology (Borenstein et al., 2009) to draw conclusions regarding gender differences. Overall, the results of the research conducted over the past thirty years provides convincing evidence that the *Central Eight* and the gender neutral assessment schemes that comprise these risk factors are valid measures of assessment for both males and females (Olver et al., 2014), with some possible evidence that at the domain level important gender differences may exist.

*Youth assessment and screening instrument (YASI; Orbis Partners, 2000).*

Another assessment tool comprised primarily of gender neutral items is the YASI<sup>16</sup>, an adapted version of the Washington Juvenile Risk Assessment Instrument (WJRAI; Washington State Institute for Public Policy, 1999). The YASI has been customized for use in a range of settings and contains a pre-screen and a full-assessment that combines risk, need, and strength factors into the estimate of risk (Orbis Partners, n.d.a). Both formats are scored based on a semi-structured interview and supplemented with collateral file information (Orbis Partners, n.d.a.). The pre-screen is used for planning and triage purposes, and consists of static and dynamic items to identify cases that are moderate or high risk and require more intensive assessment and services (Orbis Partners, n.d.a.). A total of 33 items comprise the pre-screen and includes items from the criminal history, family, school, social networks, alcohol and drugs, mental health, and attitudes domains. Most items are scored on a 6-point likert scale and are combined to generate a total score, with higher scores indicating higher risk. For the pre-screen, items are summed to create a total score on criminal history items (includes all 14 items relating to criminal history) and the social history items (20 items from the family history, school, social networks, alcohol and drugs, mental health, aggression, and attitudes domains; Orbis Partners, n.d.a.). The total risk score for the pre-screen is comprised of the total criminal history score and the total social history score. A total strength score can also be calculated for the pre-screen based on six items from the following domains, though is not typically used in

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<sup>16</sup> The YASI is being referred to as a gender neutral tool, however it could be argued that with the inclusion of additional items such as mental health items, history of running away etc. it might not be equivalent to other gender neutral models such as the LSI.

practice: family history, school, community and peers, and attitudes; N. Jones, personal communication, May 2016). Because the items of the YASI can be customized to reflect jurisdictional policies and procedures, the cutoff scores for the pre-screen total risk score used to classify youth as low, moderate, and high risk vary across jurisdictions where the tool has been implemented (i.e., across the U.S., Canada, Scotland, and Australia; Orbis Partners, n.d.a.).

The full assessment, used for case planning and management is comprised of close to 100 items across the same domains as the pre-screen, in addition to a social/cognitive skills, and an employment and free time domain (Orbis Partners, n.d.a.). Each subdomain of the YASI full assessment is comprised of a subdomain-specific total static risk score, a total dynamic risk score, and a total dynamic protective score<sup>17</sup>; two domains (attitudes, and employment and free time) have an additional subdomain score, a total static protective score, Orbis Partners, 2008). A defining feature of the YASI assessment is that many items within each of the domains can be scored as either a risk factor or a strength factor (Baird, Healy, Johnson, Bogie, Dankert, & Scharenbroch, 2013); one end of the likert scale is reflective of the item as a strength and the other end of the scale is reflective of a risk response; Orbis Partners, 2008). In addition to the subdomain scores, a total risk (static risk + dynamic risk) and a total strength (static protective + dynamic protective) score is also calculated for each domain, as well as total scores that reflect cumulative scores across all domains (total static risk, total dynamic

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<sup>17</sup> The scale developers have termed the strengths components of the YASI scale as protective to reflect the influence of strength factors (i.e., the potential to buffer or reduce) as suggested by the literature (Orbis Partners, n.d.a.).

risk, total static protective, and total dynamic protective). Finally, a total risk (all static risk and all dynamic risk) and a total protective (all static protective and all dynamic protective) are also created by summing across all domains. A detailed description of the YASI scoring is provided in the methods section. Again, the cutoff scores that designate a rating of low, moderate, or high risk on YASI total scores, domain scores, and subdomain scores are based on jurisdictional standards and thus vary.

The YASI has been adapted for a number of different jurisdictions and validation efforts have shown good psychometric properties. The YASI-Virginia validation study reported high percentage agreement (nearly 85%; Baird et al., 2013) between raters in the scoring of the items, and the agreement between staff and expert raters was close to 80%. ICC values for the risk level and risk score were also good – .77 and .89 respectively. Of the nine reported juvenile assessment tools included in their review (Baird et al., 2013), the YASI pre-screen was considered in the top three for predictive validity. Among a sample of male ( $n = 1405$ ) and female ( $n = 507$ ) youth on probation with the Virginia department of juvenile justice, the YASI pre-screen risk predicted conviction over a 12-month follow-up period with a reported  $AUC$  of .67 (males) and  $AUC = .71$  (females). For the YASI-Illinois, pre-screen risk predicted new police contacts within 12 months for a sample of youth ( $N = 4,998$ )<sup>18</sup> on probation ( $AUC = .65$ ) and new violent police contacts ( $AUC = .64$ ; Orbis Partners, 2007a). Further Orbis Partners, they reported that among a sample of 3,498 probation cases in Illinois the total dynamic risk score (dynamic risk summed across domains) predicted new police contacts almost as well as the pre-

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<sup>18</sup> Note these results were not broken down by gender.

screen total risk, *AUC* for the full assessment dynamic risk score was reported as .64. Similarly, the dynamic protective factor total score also predicted new police contacts with the 3,498 probation cases over a 12-month follow-up, *AUC* = .62 (Orbis Partners, 2007a). Another validation study was conducted by Jones (2011). From a sample of 2,369 youth (males = 1,550 and females = 819) on probation across New York State, the YASI pre-screen total risk predicted new convictions for males (*AUC* = .64) and females (*AUC* = .60). Similar results were reported for the full assessment risk score, which was calculated by subtracting the total strength from the total risk (i.e., YASI total score = YASI total risk – YASI total strength; Jones, 2011)<sup>19</sup>. The YASI total score predicted new convictions for both males (*AUC* = .63) and females (*AUC* = .62). Finally, a validation study was conducted by Jones et al. (2016) using a sample of 464 young offenders (114 females, 350 males) on community supervision in Alberta, Canada. The pre-screen risk predicted new offences over an 18-month fixed follow-up period with a high degree of accuracy, particularly for the males (*AUC* = .82). The reported accuracy with females was reported as *AUC* = .69. Large effects were also observed for the prediction of new violent offences with the YASI pre-screen risk score – *AUC* = .79 for both the males and the females. In addition, Jones et al. (2016) also demonstrated that the individual domains for the full assessment (criminal history, family history, school, social networks, substance use, aggression, attitudes, and skills) were moderately predictive of new arrests within this sample. For two domains – mental health (not predictive) and

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<sup>19</sup> Note that in practice, the YASI does not generate a cumulative total score for the scale that incorporates risk and strengths – rather, it provides the total risk and total strength categorized as low, moderate, and high based on cutoffs determined by the jurisdiction to be used in case planning and management (Jones, 2011).

employment and free time, only a small effect was reported (Jones et al., 2016). The three strength domains with the greatest predictive accuracy in the Jones et al. (2016) study was for the attitudes ( $AUC = .69$ ), social and cognitive skills ( $AUC = .68$ ), and the social networks ( $AUC = .67$ ) for the total sample (results at the domain level were not disaggregated by gender).

Together, the validation results conducted to date provide evidence for the predictive validity of the YASI as a risk assessment measure for justice involved youth. All four of the studies discussed reported results on the pre-screen, however only two of the studies (Jones, 2011; Jones et al., 2016) conducted analysis at the level of the domain for the full assessment. In addition, the studies to date have primarily focused on community-based samples across various states in the U.S. (Virginia, Illinois, New York) and Canada (Alberta). Further empirical validation of the YASI would benefit from a closer examination of the YASI full assessment, at the level of the domains as well as the total risk and total protective scores. Mostly (with the exception of one of the studies discussed above – Orbis Partners, 2007a) results were disaggregated by gender to allow for validity estimates for both males and females, however future research should continue to disaggregate the results by gender to enable gender comparisons and to draw conclusions on the relative predictive accuracy of the scale as superior for males or females. As well, further contributions could be made to evaluate the incremental validity of strengths above and beyond total risk, as well as providing evidence to further conceptualize strengths as promotive or protective as hypothesized in the literature (Farrington, 2003; Farrington, Ttofi, & Piquero, 2016).

**Female offender risk assessment through a gender responsive lens.**

Alternatively, others have studied risk assessment from a female-centred perspective. Female-centered advocates posit a criminalized theory of crime (Chesney-Lind & Shelden, 2004) whereby experiences of trauma, victimization, mental health, and dysfunctional relationships culminate into poor coping strategies that lead to criminal activity (Bloom et al., 2003; Brennan et al., 2008; Chesney-Lind & Shelden, 2004; Daly, 1992; 1994; Johansson & Kempf-Leonard, 2009; McClennan et al., 1997; Salisbury & Van Voorhis, 2009). In particular, gender responsive scholars are interested in a holistic approach that will achieve reductions in recidivism, while simultaneously building stronger and healthier connections with family, as well as enhanced well-being and empowerment (Hannah-Moffat, 2009; Van Voorhis, 2012). When compared with the needs emphasized from gender neutral supporters, there are important differences in the priority of factors to be addressed. For example, gender responsive scholars advocate for the importance of trauma/victimization, poor mental health, and unhealthy relationships which are weak or moderate predictors of crime according to gender neutral advocates. Additionally, factors stemming from the pathways theory including low self-worth, economic marginalization/poverty, parental stress, unsafe living situations, and physical health needs are also viewed as relevant (Blanchette & Brown, 2006; Bloom et al. 2003; Gobeil et al., 2016; Salisbury & Van Voorhis, 2009; Van Voorhis, 2012) but are considered non-significant factors in the prediction of recidivism according to gender neutral scholars (Bonta & Andrews, 2017).

In response, some have argued that the pathways theory is too one-dimensional and does not offer additional mechanisms whereby females engage in crime (Blanchette

& Brown, 2006; Odgers et al., 2007). Unlike the empirical evidence that has established the priority of factors identified from a gender neutral perspective (i.e., the *Central Eight*), there is limited research that has empirically tested the extent to which the hypothesized female specific factors predict criminal behaviour and contribute to improved overall well-being. However, there is increasing evidence to support that risk and strength factors do not manifest themselves in the same ways for males and females, particularly for substance abuse (Andrews et al., 2012), criminal romantic partners (Benda, 2005; Kerig & Schindler, 2013), and childhood abuse (Belknap, 2015; Chesney-Lind, 1997; Green, 2006). For example, Benda (2005) demonstrated a difference in being married for males and females – for males, being married was negatively related with future offending (i.e., a promotive factor) whereas for females, being married (i.e., having a romantic criminal partner) was a risk factor for engaging in criminal behaviour. Risk assessment for females built on the principles of gender responsiveness have been developed, including the WRNA and the SPIn-W for women, and the YASI-G (Orbis Partners, 2007b) for girls.

*The Women's Risk/Needs Assessment (WRNA)*. The National Institute of Corrections, together with the University of Cincinnati developed a risk/needs assessment for women offenders – the WRNA (Van Voorhis et al., 2008). Designed for use across different settings (e.g., probation, institutions, and parole), the WRNA contains an interview and a self-report survey designed to assess factors from the gender neutral *Central Eight* (criminal history, antisocial attitudes, antisocial associates, antisocial personality, family, substance use, employment, education, leisure/recreation), assessed with the LSI-R (Andrews & Bonta, 1995a), and gender responsive factors (housing

safety, victimization, abuse, parental stress, anger, anxiety/depression, psychosis, and relationship dysfunction; Van Voorhis et al., 2008). In addition to risk factors, the WRNA was also designed to assess strength factors – family support, relationship support, educational assets, self-efficacy, and self-esteem. The authors posit that the superiority of this assessment over the LSI-R alone is not only the inclusion of additional gender responsive items, but also the reframing of the items (including gender neutral items) in gender responsive terms (Van Voorhis et al., 2008) – for example, the item housing and accommodations considered not only homelessness but also safety and violence within the home (Van Voorhis et al., 2008). The total risk scale score is calculated by summing the risk factors and subtracting the strength factors, with higher scores indicative of higher risk (Van Voorhis et al., 2008).

Validation results have been reported by the scale developers across a variety of settings, including samples of women – probation, prison, and pre-release, across seven states in the U.S. (Missouri, Rhode Island, Iowa, Minnesota, Kentucky, Ohio, and California). Validation results for the original WRNA full assessment scale demonstrated moderate predictive validity for any failure within 12 months across probation –  $AUC = .63$ , prison –  $AUC = .64$ , and pre-release –  $AUC = .63$  (Van Voorhis, Bauman, & Brushett, 2012; 2013a; 2013b). Based on the validation work, the original WRNA was revised by removing items not strongly associated to the outcomes as a way to increase the predictive ability of the instrument resulting in an updated scale and new validation results (Voorhis et al., 2013a; 2013b; 2013c). The re-validation results across two settings were improved – probation  $AUC = .67$  and prison  $AUC = .70$ . The results for the pre-release ranged from  $AUC = .58$  to  $.72$  across three jurisdictions that were included in

revalidation results (Van Voorhis et al., 2013a; 2013b; 2013c). To date, there do not appear to be any independent validations of the WRNA aside for the research conducted by the scale developers. Further validation work is needed to assess the incremental validity of the gender responsive items compared to the gender neutral items alone, as well as the incremental validity of the use of strength factors above and beyond only risk factors. As recognized by Van Voorhis (2012), the validation studies did not include any comparison samples of men, a criticism of validation work that attempts to speak to gender differences (Blanchette & Brown, 2006). Additional research to measure the predictive ability of the tool with males would provide an indication of the superiority of the tool as a valid tool for females, with greater predictive accuracy.

*Service Planning Inventory for Women (SPIn-W)*. Another example of a gender responsive risk assessment tool built from the ground up for females is the Service Planning Inventory for Women (SPIn-W; Orbis Partners, 2003). The SPIn-W is available in a pre-screen (for triage and classification) and full assessment (case planning and management) format (Jones et al., 2015; Robinson, 2007) and is scored from a semi-structured interview and file review. The full assessment (90 items) and pre-screen (35 items) is comprised of risk, need, and strength indicators across the domains of criminal history, response to supervision, family and children, social network, substance use, vocational employment, attitudes, social/cognitive skills, mental health, violence, and community living (Orbis Partners, n.d.b.). Specifically, the strengths include the following: peer relationships, intimate relationships, marital factors, attachment to children, employment motivation, law-abiding attitudes, accepts responsibility, impulsivity (i.e., self-control), hostile attributions (i.e., restraint), financial situation, and

accommodation (Jones et al., 2015). Importantly, the items are designed to capture the unique context of women's experiences (Jones et al., 2015) – a common criticism levied in the gender responsive literature against the validity of gender neutral models (Belknap & Holsinger, 2006). Individual items are scored on a six point likert scale which are then weighted (based on theory and empirical evidence), and summed to generate a total risk score (comprised of both static and dynamic items) and a total strength score (Jones et al., 2015).

Jones et al. (2015) tested the predictive accuracy of the original SPIn pre-screen using a sample of male ( $n = 2962$ ) and female ( $n = 694$ ) offenders on community supervision. Overall, the SPIn pre-screen predicted recidivism (re-arrest for a new offence) over a fixed 18 month follow-up with high predictive accuracy ( $AUC = .77$ ) for both males and females. In addition, Jones and colleagues (2015) were able to demonstrate the incremental validity of the strength factors above and beyond the risk total score in the prediction of recidivism for both males and females, demonstrating a protective effect for the strength score in their models.

*Youth Assessment Screening Instrument – for Girls (YASI-G; Orbis Partners, 2007b)*. In 2007, Orbis Partners developed another version of the YASI, designed specifically for girls. Based on theory, the YASI-G was developed to include additional items that reflect unique experiences relevant to females. The YASI-G was conceptualized and developed by Orbis Partners however it was never put into practice (Orbis Partners, 2007b). The difference between the original YASI and the YASI-G include the addition of gender responsive items to the family, school, social networks, substance use, mental health, attitudes, social/cognitive skills, employment and free time,

and violence and aggression domains. Items on the YASI-G were conceptualized to be scored in the same manner as described previously for the original YASI. The specific items added to the domains include the following:

**Family history**

- youth's attachment to children
- youth's parenting skills
- motivation to address family history risk

**School**

- motivation to address school risk

**Social networks**

- intimate relationships (i.e., level of stability/conflict within intimate relationship)
- relationship risk factors (e.g., domestic violence, victimization/conflict with partner, partner with antisocial history)
- motivation to address social network risk

**Substance abuse**

- primary motivation for use (peer pressure, stress, self-medicating, coping with trauma)
- motivation to address substance abuse risk

**Mental health**

- additional mental health indicators (e.g., non-suicidal self-injurious behavior, eating disorders, complicated grief, trauma)
- sexual vulnerability (i.e., sexual exploitation or prostitution)
- physical health concerns (e.g., physical condition, nutrition, pregnancy related,

STD, sexual activity without contraception)

- motivation to address mental/physical health

#### **Attitudes**

- attitudes towards CJS
- motivation to address attitudes risk

#### **Social/cognitive skills**

- relationship skills (ability to form mutually rewarding relationships)
- expression of needs
- trust in others
- emotional expression (ability to express and cope with emotions)
- self-efficacy (level of confidence in managing problems)
- goal setting/planning (realistic vs. unrealistic goals and plans)
- optimism (i.e., regarding the future)
- motivation to address skills risk

#### **Free time and employment**

- motivation to address free time risk

#### **Aggression and violence**

- anger management skills
- frequently in conflict with others
- motivation to address violence and aggression

As this was not implicated in practice, there exists no empirical data to date that tests the YASI-G model as a valid risk assessment among youthful female offenders.

Given the call for further research on gender responsive variables as valid indicators of

risk and need for females (Bloom et al., 2003; Morton & Leslie, 2005; Salisbury & Van Voorhis, 2009; Van Voorhis et al., 2010), incorporating the items of the YASI-G into a risk assessment scheme for young offenders, as done in the Gendered Pathways Study (Brown & Skilling, 2009), can provide a meaningful contribution to theory and practice. To be described shortly, a gender informed version of the YASI (YASI-GI) was included in the research protocol of the Gendered Pathways Study that allowed for the validation of gender responsive items together with the gender neutral items of the original YASI on a sample of both male and female justice-involved youthful offenders across both custodial and community settings. As such, the validation of gender responsive and gender neutral items on a sample of both males and females addresses an important gap in the literature to date that is able to simultaneously measure gender differences and test the validity of gender responsive items.

### **Purpose of Study**

Using a sample of justice-involved male and female Canadian youth from central and eastern Ontario, the primary goal of this study was to validate the psychometric properties of the Youth Assessment and Screening Instrument (YASI; Orbis Partners, 2000) and the Youth Assessment and Screening Instrument – Gender Informed (YASI-GI; Orbis Partners, 2011). Utilizing a sample of both male and female youth allowed for gender comparisons in instrument validity on risk and strength scales. Using a prospective research design, the primary purpose of this study was to answer the following research questions.

### **Research Questions and Hypotheses**

#### **Research question 1: Compared to established risk assessments instruments**

**such as the YLS/CMI and the PCL:YV, is the Youth Assessment and Screening Instrument (YASI) a valid measure of risk assessment for justice-involved youth? At the global level (i.e., total scale scores), are the original YASI and the gender informed version of the YASI (YASI-GI) able to reliably discriminate (i.e., relative predictive accuracy; Helmus & Babchishin, 2017) between recidivists and non-recidivists for both general and violent recidivism with comparable predictive accuracy of established risk assessments (YLS/CMI) among male and female young offenders?**

*Hypothesis 1a:* Overall, it is hypothesized that the pre-Screen and full assessment total scores, which include the YASI/YASI-GI pre-screen total risk scores, the YASI/YASI-GI pre-screen total protective scores, YASI/YASI-GI total adjusted score<sup>20</sup>, YASI/YASI-GI total risk score, and YASI/YASI-GI total protective score will be moderately predictive of both general and violent recidivism based on preliminary validation results of the YASI assessments used in practice (Baird et al., 2013; Jones, 2011; Orbis Partners, 2007a). It is expected that the predictive accuracy of the original YASI and the YASI-GI will be comparable or superior to the validation results with youth demonstrated with the YLS/CMI (Olver et al., 2009, 2014; Schwalbe, 2007) and PCL:YV (Olver et al., 2009) assessment instruments.

*Hypothesis 1b:* Based on the inclusion of the gender responsive variables contained in the YASI-GI, it is hypothesized that the total YASI-GI pre-screen and full assessment total scores will demonstrate greater predictive accuracy for the females

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<sup>20</sup> YASI/YASI-GI total adjusted score = YASI/YASI-GI total risk score – YASI/YASI-GI total protective score.

compared to the original YASI (pre-screen and full assessment total scores), the YLS/CMI, and the PCL:YV, which will demonstrate greater predictive accuracy for the males.

**Research question 2: Do the original YASI and the YASI-GI pre-screen and full assessment demonstrate absolute predictive accuracy (i.e., calibration; Hanson 2017; Helmus & Babchishin, 2017) at the global level (i.e., total scores) for both general and violent recidivism?**

*Hypothesis 2:* It is hypothesized that the original YASI and the YASI-GI pre-screen and full assessment total scores (YASI/YASI-GI pre-screen total risk score, YASI/YASI-GI pre-screen total protective score, YASI/YASI-GI adjusted total risk score, YASI/YASI-GI total risk score, and YASI/YASI-GI total protective score will be well calibrated for predicting general and violent recidivism. Specifically, it is expected that the higher the total scores, the higher the rate of general and violent recidivism will be observed. As comparable risk assessment measures, it is expected that the YLS/CMI and PCL:YV total scores will also be well calibrated with general and violent recidivism outcome, for the sample.

**Research question 3: At the domain level (e.g. criminal history, family history) are the original YASI and the YASI-GI full assessment domain scores predictive of general and violent recidivism for both males and females? Is there evidence of gender differences at the domain level for the original YASI and/or the YASI-GI and how do the results for the YASI/YASI-GI compare to the results for the YLS/CMI and PCL:YV at the domain level?**

*Hypothesis 3:* It is expected that there will be gender differences in predictive accuracy (i.e., gender saliency – predictive for both males and females however the magnitude of the effect is greater for one gender over the other, indicated by non overlapping confidence intervals), and/or gender specificity (significantly predictive for one gender and not the other) at the domain level. Specific differences are hypothesized for the substance use, mental health, family, social networks, and personality domains as female salient predictors based on previous meta-analytic work (Olver et al., 2014) and the gender responsive literature that has identified these factors as influential in the offending of women and girls (Blanchette & Brown, 2006; Bloom et al., 2003; Gobeil et al., 2016; Salisbury & Van Voorhis, 2009; Van Voorhis, 2012).

**Research question 4: Do the YASI and YASI-GI measures demonstrate convergent validity with other established youth assessment instruments, the YLS/CMI and PCL:YV?**

*Hypothesis 4:* It is hypothesized that the original YASI and YASI-GI will be strongly correlated with the YLS/CMI domain scores and total risk score and total strength score. In addition it is expected that the original YASI and the YASI-GI will be strongly correlated to the 4 factors of the PCL:YV, as well as the total PCL:YV score

**Research question 5: Do the strength factors included in the original YASI and YASI-GI significantly contribute to the prediction of recidivism at the global level? Is there evidence of a promotive effect of strength factors at the global and domain level and is there any evidence for gender differences? Do the strengths add incrementally above and beyond risk in the prediction of recidivism – is there evidence of a protective effect?**

*Hypothesis 5a:* It is hypothesized that the inclusion of the total strength score into the prediction model of recidivism will significantly contribute to the predictive ability of the total risk score from both the original YASI and YASI-GI pre-screen and full assessment totals.

*Hypothesis 5b:* At the domain level, it is hypothesized that strength domains of the YASI and YASI-GI will be predictive of success (no general or violent recidivism) demonstrating a promotive effect (i.e., inversely related to outcome). It is expected that the family, social networks, and social/cognitive skills domains of the YASI-GI will be female salient based on the addition of gender responsive variables to these domains such as intimate relationships, relationship risk, self-efficacy, emotional expression, and relationship skills posited as factors that assist in improving the lives of justice-involved women and girls (Blanchette & Brown, 2006; Bloom et al., 2003; Gobeil et al., 2016; Salisbury & Van Voorhis, 2009; Van Voorhis, 2012).

*Hypothesis 5c:* It is hypothesized that the strengths factors will add incrementally to the prediction of recidivism when included in models of risk. Specifically, it is expected that the addition of the total protective score from the YASI and YASI-GI pre-screen and full assessment will add incrementally to the total risk score in the prediction of both general and violent recidivism. In other words, a significant interaction is expected between the total risk and total protective score demonstrating a protective effect that buffers or reduces the influence of risk (Farrington, 2013; Farrington et al., 2016; Jones et al., 2015). Thus, the purpose is to explore evidence in favour of defining the strength components of the YASI/YASI-GI as protective (as theorized by Orbis Partners, n.d.a.).

## Method

### Participants

Two hundred fifty-four justice-involved youth (106 female, 148 male) participated in the study. These 254 youth were part of a larger *Gendered Pathways Study* (Brown & Skilling, 2009,  $N = 341$ ) originally conducted between 2010 and 2012. Student research assistants travelled to custody or probation office sites in eastern and central Ontario between 2010 and 2012. The initial data collection phase involved a battery of self-report questionnaires, one-on-one risk assessment interviews, and on site file reviews. Only 254 of the original 341 participants had been scored on the Youth Assessment and Screening Instrument (YASI) and were available for follow-up when recidivism data was collected<sup>21</sup>

The mean age of the sample at the time of the pathways study interview was 17.6 ( $SD = 1.1$ ) for the boys and 17.1 ( $SD = 1.3$ ) for the girls,  $t(252) = 3.06, p < .01$ . There was a significant difference in the breakdown of ethnicity between males and females with most females identified as Caucasian and most males identified as either Caucasian or Black (see Table 18 for a detailed breakdown). The difference in racial background between males and females was significantly different.

The majority of study participants were either on remand, probation, or in custody, (the complete breakdown is provided in Table 18). The largest proportion of youth were either accused or convicted (i.e., index offence) for administration of justice

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<sup>21</sup> The YASI was not administered to 67 cases at one of the research sites (the Centre for Addiction and Mental Health) and was completely missing for another 10 cases in the sample. A further 10 cases had either not been released from custody or follow-up information was unavailable.

offences for both males and females. Also a significant percentage of the sample had been charged or convicted for a violent offence as their index offence(s).

Table 18

*Descriptive Profile of Justice-Involved Youth in Study on Demographics, Index Offence(s), and Sentencing Disposition*

|                              | Total<br><i>N</i> =254<br>% ( <i>n</i> ) | Males<br><i>n</i> = 148<br>% ( <i>n</i> ) | Females<br><i>n</i> = 106<br>% ( <i>n</i> ) | $\chi^2$ | Cramer's <i>V</i> / <i>Phi</i> |
|------------------------------|--|---|---|----------|--------------------------------|
| Ethnicity                    |  |   |   | 18.14*** | .27                            |
| Caucasian                    | 46.5 (118)                               | 35.1 (52)                                 | 62.3 (66)                                   |          |                                |
| Indigenous                   | 5.5 (14)                                 | 6.1 (9)                                   | 4.7 (5)                                     |          |                                |
| Black                        | 25.6 (65)                                | 31.1 (46)                                 | 17.9 (19)                                   |          |                                |
| Other                        | 22.0 (56)                                | 27.0 (40)                                 | 15.1 (16)                                   |          |                                |
| Index offence                |  |   |   |          |                                |
| Homicide & related           | 3.1 (8)                                  | 3.4 (5)                                   | 2.8 (3)                                     | .06      | -.02                           |
| Serious violent <sup>a</sup> | 28.0 (71)                                | 38.5 (57)                                 | 13.2 (14)                                   | 19.64*** | -.28                           |
| Violent sexual               | 2.8 (7)                                  | 4.7 (7)                                   | 0.0 (0)                                     | 5.16*    | -.14                           |
| Break, enter, & related      | 10.6 (27)                                | 14.2 (21)                                 | 5.7 (6)                                     | 4.73     | -.14                           |
| Non-violent sexual           | 1.6 (4)                                  | 2.7 (4)                                   | 0.0 (0)                                     | 2.91     | -.11                           |
| Traffic/import drugs         | 4.3 (11)                                 | 6.1 (9)                                   | 1.9 (2)                                     | 2.62     | -.10                           |
| Weapons offences             | 15.4 (39)                                | 24.2 (36)                                 | 2.8 (3)                                     | 21.96*** | -.29                           |
| Fraud & related              | 1.2 (3)                                  | 0.7 (1)                                   | 1.9 (2)                                     | .78      | .06                            |

|                                     | Total<br><i>N</i> =254<br>% ( <i>n</i> ) | Males<br><i>n</i> = 148<br>% ( <i>n</i> ) | Females<br><i>n</i> = 106<br>% ( <i>n</i> ) | $\chi^2$ | Cramer's <i>V</i> / <i>Phi</i> |
|-------------------------------------|--|---|---|----------|--------------------------------|
| Index offence cont'd...             |  |   |   |          |                                |
| Misc. offences against the person   | 10.2 (26)                                | 10.8 (16)                                 | 9.4 (10)                                    | .13      | -.02                           |
| Theft/possession                    | 21.3 (54)                                | 20.9 (31)                                 | 21.7 (23)                                   | .02      | .01                            |
| Assault & related                   | 36.6 (93)                                | 31.8 (47)                                 | 43.3 (44)                                   | 3.61     | .12                            |
| Property damage                     | 8.7 (22)                                 | 8.1 (12)                                  | 11.3 (12)                                   | .69      | .05                            |
| Arson <sup>b</sup>                  | 0.8 (2)                                  | 1.4 (2)                                   | 0.0 (0)                                     | -        | -                              |
| Obstruct justice                    | 5.9 (15)                                 | 4.1 (6)                                   | 8.5 (9)                                     | 2.11     | .09                            |
| Possession drugs                    | 5.1 (13)                                 | 6.8 (10)                                  | 2.8 (3)                                     | 2.03     | -.09                           |
| Traffic criminal code               | 1.2 (3)                                  | 1.4 (2)                                   | 0.9 (1)                                     | .10      | -.02                           |
| Administration of justice           | 63.4 (161)                               | 64.9 (96)                                 | 61.3 (65)                                   | .37      | -.04                           |
| Public order offences               | 0.8 (2)                                  | 0.0 (0)                                   | 1.9 (2)                                     | 2.78     | .11                            |
| Other federal offences              | 3.1 (8)                                  | 3.4 (5)                                   | 2.8 (3)                                     | .07      | -.02                           |
| Legal Disposition                   |  |   |   | 24.94**  | .31                            |
| Probation                           | 23.2 (59)                                | 14.2 (21)                                 | 35.8 (38)                                   |          |                                |
| Custody & super. order (in custody) | 22.0 (56)                                | 27.7 (41)                                 | 14.2 (15)                                   |          |                                |

|  | Total<br><i>N</i> =254<br>% ( <i>n</i> ) | Males<br><i>n</i> = 148<br>% ( <i>n</i> ) | Females<br><i>n</i> = 106<br>% ( <i>n</i> ) | $\chi^2$ | Cramer's <i>V</i> / <i>Phi</i> |
|--|--|---|---|----------|--------------------------------|
| Legal Disposition cont'd...            |  |   |   |          |                                |
| Custody & super. order (in community)  | 2.0 (5)                                  | 2.7 (4)                                   | 0.9 (1)                                     |          |                                |
| Deferred custody and supervision order | 1.2 (3)                                  | 2.0 (3)                                   | 0.0 (0)                                     |          |                                |
| Remand                                 | 48.0 (122)                               | 48.6 (72)                                 | 47.2 (50)                                   |          |                                |
| Court ordered assessment (o/c pending) | 3.1 (8)                                  | 4.1 (6)                                   | 1.9 (2)                                     |          |                                |
| Other                                  | .39 (1)                                  | .68 (1)                                   | 0.0 (0)                                     |          |                                |

*Note.* <sup>a</sup>Serious violent could include any of the following: assault person before/after robbery, extortion, forcible confinement, kidnap intent forcible confinement, material benefit, rob/steal with weapon, robbery, robbery threat/violent, trafficking in persons, wounding with intent firearm. <sup>b</sup>Chi-square could not be calculated.

## **Procedure**

Follow-up data was collected from the Ministry of Community and Correctional Services (MCCS; Ontario) in July of 2014 in the form of electronic records, and Royal Canadian Mounted Police Records (Canadian Police Information Centre; CPIC) records in hard copy paper format were requested and received for the sample in June 2016, to measure recidivism. All ethics and legal requirements were met including securing ethics clearance from three ethics boards (Carleton University, Centre for Addiction and Mental Health, and MCCS) and a court order.

## **Measures**

**Youth Assessment Screening Instrument Original (YASI; Orbis Partners, 2000).** The original YASI is divided into two components – a pre-Screen and a full-Assessment. In practice, the pre-screen yields a pre-screen risk score from a total of 33 items across the domains of: criminal history (14 items), family (4 items), school (4 items), social networks (1 item), substance use (1 item), mental health (7 items), attitudes (1 item), and violence (1 item). The pre-screen assessment yields a risk component and a strength component. More specifically, the risk component is comprised of two domains – criminal history and social history. The following individual items are summed to create the criminal history domain of the pre-screen: police contacts for offences, age at first police contact, number of police contacts, police contacts for category I offences, adult court, weapons offences, police contacts for offences against another person, police contacts for category I against another person, placements, number of times admitted to remand and/or custody, escapes, failure to appear in court, number of breaches of supervision. The social history items include: times run away or kicked out of the home,

family finding of child neglect, parental authority, circumstances of family living in the home, current enrollment status, attendance, academic performance, and conduct at school in previous three months, associates, alcohol and drug use, mental health problems, homicidal and/or suicidal ideation, sexual aggression, history of abuse – physical or sexual, victimization, other mental health indicators, violence, accepts responsibility for behaviour. The pre-screen total risk score is calculated by summing together the items of the criminal history domain and the social history domain.

A pre-screen total strength score is calculated by summing the following items: parental authority, school attendance, school conduct, academic performance in previous three months, associates time spent with, and accepts responsibility for behaviour.

Individual item scoring is detailed in Appendix D. It should be noted that Orbis Partners is currently re-examining and revising the derived weights as they currently exist (D. Robinson, personal communication, March 2017) for YASI items. As the developers have not finalized the revisions to the weights, a decision was made to adapt a simple Burgess method for scoring in the current study<sup>22</sup>. To apply this simple Burgess method of scoring, items such as the two items below were coded as follows:

|   |                                |
|---|--------------------------------|
| 2. <b>Age at first police contact for an offence:</b> Include any police contacts that resulted in a disposition or an Extra Judicial Sanction. | Age at 1 <sup>st</sup> Offense |
| 3. <b>Number of police contacts:</b> Total number of police contacts that resulted in a disposition or an Extra Judicial Sanction.              |                                |

For the item, age at first police contact the variable response (youth's age) was

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<sup>22</sup> To keep the scoring as close as possible to the original intent, the YASI scoring manual (Orbis Partners, 2008) was followed to guide decisions for item coding with the Burgess method.

trichotomized<sup>23</sup> – age 15 or greater for age at first police contact was recoded as ‘0’ (no/low risk), age 13 and 14 was coded as ‘1’ (moderate risk), and 12 years or younger was coded as ‘2’ (high risk). Similarly, the number of police contacts item was recoded as: 0 or 1 police contacts = ‘0’ (no/low risk), 2 or 3 police contacts = ‘1’ (moderate risk), and 4 or more police contacts = ‘2’ (high risk). All items in the criminal history domain were similarly recoded to redistribute variable responses using a simple Burgess method. Once items were recoded, all of the items in the criminal history domain were summed to create a total criminal history score that ranged from a plausible 0 to 21. Similarly, all of the social history items were summed to create a social history domain that ranged from 0-36. Further information regarding individual item scoring is provided in Appendix D.

The more in-depth full assessment instrument yields three subdomain total scores (static risk, dynamic risk, and dynamic protective) for each of the following domains: criminal history (14 items), family (18 items), social networks (11 items), mental health (8 items), substance use (4 items), school (14 items), social/cognitive skills (13 items), and violence/aggression (8 items). A fourth subdomain (static protective) is added for the attitudes (9 items), and employment and free time (8 items) domains. In addition, a total risk score (includes static risk and dynamic risk across all domains), a total protective score (includes static protective and dynamic protective across all domains), as well as a total static risk score (all static risk items summed), total dynamic risk score (all dynamic risk items summed), total static protective<sup>24</sup> (all static protective items summed), and a

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<sup>23</sup> As per the Orbis coding guidelines (Orbis Partners, 2008).

<sup>24</sup> The developers referred to the strengths in the YASI assessment as protective to reflect the potential for influence of strengths on risk (Orbis Partners, 2000), though the conceptualization of strengths as promotive or protective is still debated (Jones et al.,

total dynamic protective (all dynamic protective items are summed) are calculated. A complete breakdown of the domain components and subdomains are presented in Table 19.

Calculating the total scores within each of the domains and the total risk and strength scores overall is very complex. Further, most (83%) items are scored on a likert scale (see below – accepts responsibility) or a dichotomous yes/no to reflect the individual response to the item(see Appendix C for a more detailed narrative review and Appendix D for the actual scoring)<sup>25</sup>.

Primary data on this assessment was collected as part of the larger Gendered Pathways Study (Brown & Skilling, 2009) and scoring of the assessment was based on information obtained from one on one interviews with participants, as well as offender file reviews. Items were scored by the research assistants from the Gendered Pathways Study who were trained by Orbis Partners on YASI assessment and scoring protocols.

As part of the larger Gendered Pathways Study, an interrater dataset was created for all measures included as part of the study. Using 21 reliability cases, interrater reliability of the YASI was evaluated. One-way random ICC single measures were calculated to measure the IRR for the original YASI pre-screen and full assessment total scores. As demonstrated in Table 19, all measures of *ICC* for the original YASI pre-screen were good ( $.60 < ICC < .74$ ) or excellent ( $ICC > .75$ ). Comparably, ICC values

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2015). This does not imply that the subdomains are assumed to be protective; this study will explore the potential for incremental validity and possible interactions to weigh in on the debate of strengths as promotive or protective.

<sup>25</sup> The remaining 17% of items were coded in a manner similar to the age at first police contact as described above.

were excellent for full assessment scores including YASI total adjusted risk score, YASI total risk score, and YASI static risk total ( $ICC > .75$ ). The YASI dynamic risk total for the full assessment demonstrated good interrater reliability ( $ICC = .66$ ).

Table 19

*Interrater Reliability Results for Original YASI Pre-Screen and Full Assessment**Scores*

| Scale, Domains & Subdomains            | <i>ICC</i> |
|--|------------|
| <i>Risk</i>                            |            |
| Pre-screen                             |            |
| YASI pre-screen total risk score       | .77        |
| YASI pre-screen criminal history total | .74        |
| YASI pre-screen social history total   | .68        |
| Full assessment                        |            |
| YASI total adjusted score              | .86        |
| YASI total risk score                  | .81        |
| YASI static risk total                 | .87        |
| YASI dynamic risk total                | .66        |
| <i>Strengths</i>                       |            |
| Pre-screen                             |            |
| YASI pre-screen total protective score | .85        |
| Full assessment                        |            |
| YASI total protective score            | .82        |
| YASI static protective total           | .85        |
| YASI dynamic protective total          | .83        |

*Note.* Original YASI = Orbis Partners, 2000. Total scores were calculated by summing all individual items (calculated) that comprised the domain and sub-domain.  $ICC =$  Intraclass correlation coefficient, one-way random, single measure. YASI total adjusted score = (YASI total risk score – YASI total protective score). YASI total risk score = (YASI static risk total + YASI dynamic risk total). YASI total protective score = (YASI static protective total + YASI dynamic protective total)

**Youth Assessment Screening Instrument – Gender Informed (YASI-GI; Orbis Partners, 2011).** For the purposes of the Gendered Pathways Study (Brown & Skilling, 2009), a gender-informed version of the YASI, the YASI-GI was examined. The YASI-GI implemented in the pathways project is provided in Appendix E.

The primary differences between the original YASI and the YASI-GI implemented in the pathways study are highlighted in Appendix F. As previously discussed, gender responsive variables were added to the family, education, social networks, substance use, mental health, attitudes, social/cognitive skills, employment and free time, violence and aggression domains of the original YASI to form the YASI-G. Thus, the YASI-GI (Orbis Partners, 2011) assessment was created by combining the original YASI (Orbis Partners, 2000), with the YASI-G (Orbis Partners, 2007b). As described, the scoring procedure for the YASI-GI follows that of the original YASI. The addition of gender responsive items resulted in additional subdomains for mental health and substance use. Specifically, a dynamic protective subdomain is calculated for the YASI-GI for the mental health and substance use domains; as seen in Table 20, the dynamic protective domain for the mental health and substance use domains is not calculated for the original YASI.

Table 20

*Domains and Subdomains of the original YASI and the YASI-GI Full Assessment*

| Overall Domain        | Original YASI     |                                 | YASI-GI           |                                 |
|-----------------------|-------------------|---------------------------------|-------------------|---------------------------------|
|                       | Domain Totals     | Subdomains<br>(number of items) | Domain Totals     | Subdomains<br>(number of items) |
| Criminal history (CR) | CR total risk     | CR static risk (13)             | CR total risk     | CR static risk (13)             |
| Family history (FH)   | FH total risk     | FH static risk (3)              | FH total risk     | FH static risk (3)              |
|                       |                   | FH dynamic risk (7)             |                   | FH dynamic risk (6)             |
|                       | FH total strength | FH dynamic protective (8)       | FH total strength | FH dynamic protective (11)      |
| School (ED)           | ED total risk     | ED static risk (3)              | ED total risk     | ED static risk (3)              |
|                       |                   | ED dynamic risk (7)             |                   | ED dynamic risk (9)             |
|                       | ED total strength | ED dynamic protective (7)       | ED total strength | ED dynamic protective (9)       |
| Social networks (SN)  | SN total risk     | SN static risk (1)              | SN total risk     | SN static risk (2)              |
|                       |                   | SN dynamic risk (5)             |                   | SN dynamic risk (8)             |
|                       | SN total strength | SN dynamic protective (7)       | SN total strength | SN dynamic protective (10)      |

| Overall Domain               | Original YASI     |   | YASI-GI           |   |
|------------------------------|-------------------|---|-------------------|---|
|                              | Domain Totals     | Subdomains<br>(number of items)                       | Domain Totals     | Subdomains<br>(number of items)                       |
| Mental health (MH)           | MH total risk     | MH static risk (7)<br>MH dynamic risk (1)             | MH total risk     | MH static risk (10)<br>MH dynamic risk (3)            |
|                              | -                 | -   | MH total strength | MH dynamic protective (1)                             |
| Substance use (SU)           | SU total risk     | SU static risk (2)<br>SU dynamic risk (4)             | SU total risk     | SU static risk (2)<br>SU dynamic risk (5)             |
|                              | -                 | -   | SU total strength | SU dynamic protective (2)                             |
| Attitudes (AT)               | AT total risk     | AT static risk (1)<br>AT dynamic risk (7)             | AT total risk     | AT static risk (1)<br>AT dynamic risk (8)             |
|                              | AT total strength | AT static protective (1)<br>AT dynamic protective (7) | AT total strength | AT static protective (1)<br>AT dynamic protective (7) |
| Social/cognitive skills (SK) | SK total risk     | SK dynamic risk (7)                                   | SK total risk     | SK dynamic risk (13)                                  |
|                              | SK total strength | SK dynamic protective (7)                             | SK total strength | SK dynamic protective (13)                            |
| Employment & Free time (EM)  | EM total risk     | EM static risk (1)<br>EM dynamic risk (3)             | EM total risk     | EM static risk (1)<br>EM dynamic risk (5)             |
|                              | EM total strength | EM static protective (3)<br>EM dynamic protective (6) | EM total strength | EM static protective (3)<br>EM dynamic protective (8) |

| Overall Domain             | Original YASI     |   | YASI-GI           |   |
|----------------------------|-------------------|---|-------------------|---|
|                            | Domain Totals     | Subdomains<br>(number of items)           | Domain Totals     | Subdomains<br>(number of items)           |
| Violence & aggression (VA) | VA total risk     | EM static risk (1)<br>EM dynamic risk (3) | VA total risk     | EM static risk (1)<br>EM dynamic risk (5) |
|                            | VA total strength | EM dynamic protective (2)                 | VA total strength | EM dynamic protective (4)                 |

Interrater reliability was also run for the total scores on the YASI-GI pre-screen and full assessment. One-way random ICC values, single measures were excellent for YASI-GI pre-screen total risk ( $ICC = .79$ ) and pre-screen total protective ( $ICC = .88$ ), and good for YASI-GI pre-screen criminal history ( $ICC = .74$ ) and social history ( $ICC = .72$ ). Mostly, the results for the full assessment were excellent ( $ICC > .74$ ) with two notable exceptions – YASI-GI dynamic protective total ( $ICC = .63$ ) and dynamic risk total ( $ICC = .57$ ).

Table 21

*Interrater Reliability Results for YASI-GI Pre-Screen and Full Assessment Scores*

| Scale, Domains & Subdomains               | ICC |
|---|-----|
| <i>Risk Component</i>                     |     |
| Pre-screen                                |     |
| YASI-GI pre-screen total risk score       | .79 |
| YASI-GI criminal history total            | .74 |
| YASI-GI social history total              | .72 |
| Full assessment                           |     |
| YASI-GI total adjusted score              | .87 |
| YASI-GI total risk score                  | .82 |
| YASI-GI static risk total                 | .87 |
| YASI-GI dynamic risk total                | .57 |
| <i>Strengths Component</i>                |     |
| Pre-screen                                |     |
| YASI-GI pre-screen total protective score | .88 |
| Full assessment                           |     |
| YASI-GI total protective score            | .70 |
| YASI-GI static protective total           | .85 |
| YASI-GI dynamic protective total          | .63 |

*Note.* YASI-GI = YASI Gender Informed (Orbis Partners, 2011). Total scores were calculated by summing all individual items (calculated) that comprised the domain and sub-domain. ICC = Intraclass correlation coefficient, one-way random, single measure. YASI-GI total adjusted score = (YASI-GI total risk score – YASI-GI total protective

score). YASI-GI total risk score = (YASI-GI static risk total + YASI-GI dynamic risk total). YASI-GI total protective score = (YASI-GI static protective total + YASI-GI dynamic protective total).

**Youth Level of Service/Case Management Inventory (YLS/CMI; Hoge & Andrews, 2011).** Originally based on the Level of Services Inventory (LSI; Andrews, 1982), the YLS/CMI is designed to assess risk and need in youth between ages 12 and 18 (Hoge & Andrews, 2011). Sources of information used to assess youth on the YLS/CMI include file reviews, semi-structured and unstructured interviews, collateral informants, and standardized tests to gather sufficient information on seven key areas: 1) assessment of risk and needs, 2) summary of risk and needs, 3) assessment of other needs and special considerations, 4) final risk/need level and professional override, 5) program/placement decision, 6) case management plan, and 7) case management review. Internal consistency reported for the total risk/need score of YLS/CMI ranged from .88 to .90, and the instrument has demonstrated good predictive validity reported by numerous studies and meta-analytic reviews that have found statistically significant correlations between total scores of the YLS/CMI and re-offence indices, particularly with males and females (Hoge & Andrews, 2011; Olver et al., 2014). Olver et al. (2014) provide a comprehensive overview of reported effect sizes for youth (males and females) that ranged from  $r = .25$  to  $r = .32$  for general recidivism which is considered a moderate predictive effect (Rice & Harris, 2005).

A total of 42 items scored as present (1) or not present (0) from the semi-structured pathways interview and on-site file review assessed youth in this sample on the following eight domains: prior and current offences/dispositions, family circumstances and parenting, education/employment, peer relations, substance abuse, leisure/recreation,

personality/behaviour, and attitudes/orientation. In addition, strengths in all domains apart from the criminal history domain were also scored as present (1) or absent (0). From the 21 cases for interrater reliability in the Gendered Pathways study, the IRR for the YLS/CMI total score was excellent ( $ICC = .77$ ). The IRR for the YLS/CMI total strength score was fair ( $ICC = .55$ ).

**Psychopathy Checklist: Youth Version (PCL:YV; Forth, Kosson, & Hare, 2003).** Semi-structured interviews in addition to collateral file reviews are used to assess individuals on 20 items that comprise the four facets of the PCL:YV, that are interpersonal, affective, behavioural, and antisocial (Kosson et al., 2013). According to Neumann, Kosson, Forth, and Hare (2006), the PCL:YV is a modified version of the Hare Psychopathy Checklist – Revised (PCL-R; Hare, 2003) to reflect developmental differences between youth and adults. Each item is scored on a 3 point scale (0, 1, 2) with total scores ranging from 0 to 40, where higher scores are reflective of a larger number of psychopathic/antisocial traits. Meta-analytic reviews have found the PCL:YV to have good predictive accuracy with weighted correlations of .28 and .25 for general and violent recidivism respectively, primarily in samples of males (Olver et al., 2009).

Semi-structured interviews and on-site file reviews as part of the pathways study were used to score the participants in this study on the YLS/CMI. Based on the scoring rules of the PCL:YV, items were summed to create a total score on the four facets, as well as a total score on the instrument. As previously described, interrater reliability was conducted on a sample of 21 cases as part of the larger Gendered Pathways Study. One-way random  $ICC$ , single measures was used to measure the reliability of the PCL:YV total score, which was good ( $ICC = .74$ ).

**Recidivism.** Recidivism records were received from the Ministry of Community and Correctional Services (Ontario) and the Royal Canadian Mounted Police (RCMP). The electronic Ministry data and hard-copy Canadian Police Information Centre (CPIC) records were coded for any new offences that occurred following the first release after the pathways study interview. General recidivism (dichotomously coded 0 = No, 1 = Yes) was defined as any new offence, including violent but not technical offences. Violent recidivism was dichotomously coded (yes/no) for the following events: offences against the person including any robbery, any assault, any sexual offence, threats, kidnapping, weapon use, and other violent (i.e., arson). The complete recidivism coding manual is contained in Appendix G.

To calculate the two-year fixed follow-up, a total of 2 years (i.e., 730 days) was added to the participant's first release date that occurred following the pathways interview. Participants were released from December 2012 to May 2014, unless they were already on probation. All 254 participants in the sample had a full 2-year follow-up (i.e., no one was removed for not being at risk for the full two-year period). If the first general recidivism event occurred between the date of first release and the 2-year fixed follow up calculated date, an individual was coded as 1 (failure). If either, the general recidivism date occurred after the two-year fixed follow-up period or there was no general recidivism event, the individual was coded as 0 (non-failure). The same calculation was applied for violent recidivism – if the first violent recidivism event occurred between the date of release and the 2-year fixed follow-up calculated date, the individual was coded as 1 (failure) and if the first violent recidivism date occurred after the 2-year fixed follow-up period or there was no violent recidivism event, the individual

was coded as 0 (non-failure).

***Interrater reliability of recidivism coding.*** Interrater reliability analysis was conducted to determine the degree to which recidivism data was coded consistently across cases. A total of 3 students (2 M.A. students and a 4<sup>th</sup> year honours student) were involved in the coding of recidivism data. The intention was to calculate a Kappa for each coder pair, then average the two Kappa values for each pair to provide the arithmetic mean (Light, 1971). However, for all categorical variables, there were cell values less than 5 for each variable, meaning Kappa could not be calculated. As a result, the IRR for the categorical variables coded could only be evaluated using percent agreement, which for all categorical variables was greater than 90%. Thus, based on percent agreement, the IRR suggests that coders were consistent in their ratings of the categorical variables for the recidivism data. These findings are limited by the inability to correct for agreement that is naturally expected by chance, which is accounted for with Kappa and provides a less inflated level of agreement (Hallgren, 2012). For the continuous variables, IRR was determined using a one-way random intra-class correlation coefficient<sup>26</sup> (*ICC*). For the variables where there was sufficient data to calculate an *ICC* (at risk date, date of recidivism event), the values indicate excellent reliability - between .75 and 1.0 (Cicchetti, 1994). Detailed results for the IRR analyses are provided in Appendix H.

### **Analyses**

All data were entered into the Statistical Software Package for the Social Sciences (SPSS) version 24. The data was verified through comprehensive screening and cleaning

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<sup>26</sup> One way random intra-class correlation was chosen to account for the number of raters.

to identify and resolve any data entry errors. Missing value analysis was conducted to examine variables for any discernible patterns in missing data.

**Missing value analysis.** Missing value analysis was conducted using SPSS. At the variable level, there were no variables with more than 5% missing data. At the case level, there was no discernible pattern to suggest the data was anything other than missing at random. Because no variables had more than 5% missing values, t-tests were not available to further test for randomness of missing values. As such, because missing data is less than 5%, statistical analyses proceeded with listwise deletion as appropriate, rather than using advanced multiple imputation methods to estimate data models (Tabachnick & Fidell, 2013).

**Pearson point biserial correlations ( $r_{pb}$ ).** Bivariate prediction was measured using Pearson point biserial correlations as one method of assessing the predictive validity of the domain items on the YASI/YASI-GI and recidivism outcome (general and violent). Point biserial correlations were appropriate for this analysis because the recidivism outcome is dichotomous. Babchishin and Helmus (2015) caution the use of correlations for this purpose because when base rates of the dichotomous variable are low the estimate of the correlation is reduced; the further the base rate is from 50%, the lower the correlation. The influence of base rate was not expected to be a problem in this study as the base rate for general recidivism was 57.5% and for violent recidivism was 40.9%.

**ROC curves.** Another measure of effect size to measure bivariate prediction was area under the curve (*AUC*) from receiver operating characteristic (*ROC*) curves. *AUC* values in the prediction of recidivism can be interpreted as the probability that a randomly selected recidivist will score higher on some measurement of risk than a

randomly selected non-recidivist. As such, they provide a good measure of discrimination; that is the ability of a scale to distinguish between recidivists and non-recidivists (Helmus & Babchishin, 2017). *AUC* values vary between 0 and 1, with .5 indicating what you would expect by chance. Values greater than .5 indicate positive predictive accuracy and values less than .5 indicate negative predictive accuracy (Helmus & Babchishin, 2017). An advantage to the *AUC* is they are not influenced by base rates, as the measure of  $r_{pb}$  above (Hanson, 2008; Ruscio, 2008). Rice and Harris (2005) provide interpretation guidelines for values of *AUC* that correspond to those delineated by Cohen (1988): .55 to .63 is a small effect, .64 to .70 is a moderate effect, and .71 or higher is a large effect.

**Logistic regression.** Direct<sup>27</sup> logistic regression was used to measure the unique contribution of the domains and total scores in the prediction of the general and violent recidivism. The calculated regression coefficients represent the risk ratio; that is, how much the rate of recidivism increases with a one point increase in the scale (Hanson, 2008). The advantage of the logistic regression model to estimate predictive ability is that it is less affected by restriction of range which would be a concern for variables trichotomized into low, moderate, and high risk categories (Hanson, 2008).

*Hierarchical logistic regression to evaluate incremental validity.* One method to test the incremental predictive validity in a logistic regression model is through hierarchically well formulated logistic regression models (Kleinbaum & Klein, 2010).

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<sup>27</sup> Direct logistic regression was used because there were no a priori assumptions regarding the order in which variables were to enter the regression model (Tabachnick & Fidell, 2013).

Using two blocks, this model enters the predictors into the model in the first block, then adds the interaction between the predictors in the second block. If the interaction is significant, then this suggests there is a buffering effect of the predictor on the outcome (Kleinbaum & Klein, 2010). Hierarchical logistic regression models were used to test the incremental effect of the strength domains on the total YASI/YASI-GI risk score.

### **Results**

The results are structured in sections to present the multiple analyses conducted to study the YASI and the YASI-GI as valid measures of risk assessment among justice-involved youth. In the first section, a description of the sample on total risk and strength scores on the original YASI, the YASI-GI, the YLS/CMI, and the PCL:YV are provided. As well, the base rates of recidivism observed within this group of male and female youth are also discussed. What follows the descriptives are the separate sections of analysis pertaining to each of the research questions.

First, is a presentation of the comparative predictive validity for the original YASI and the YASI-GI with the YLS/CMI and PCL:YV. The predictive validity of the assessment instruments are compared at the global level and assess for relative predictive accuracy (i.e., discrimination) of both general and violent recidivism using point biserial correlations and *AUC* analysis. The second section considers how well the total scores (i.e., global level) of the assessments, the original YASI, YASI-GI, YLS/CMI, and PCL:YV are calibrated for the prediction of general and violent recidivism among male and female youth. Calibration of the instruments is demonstrated with graphs of expected probability plots and total scale scores. In the next section the results of the bivariate prediction of the original YASI and YASI-GI full assessment subdomains are presented.

The purpose of this analysis is to determine the significant domains in the prediction of general and violent recidivism as well as examining for potential gender differences at the domain and subdomain level. This analysis is comprised of point biserial correlations as well as *AUCs*. Following the bivariate prediction at the domain level is an examination of the convergent validity of the original YASI and YASI-GI pre-screen and full assessment scores with other established measures of risk assessment, the YLS/CMI and PCL:YV. Finally, the results conclude with the strengths component of the YASI and YASI-GI to examine the predictive validity of strengths in the YASI assessments at the global and domain level, as well as consideration for the potential of strengths to add incrementally to the prediction of risk as a protective effect. Comparisons of total strength scores from the original YASI and YASI-GI are also made to the strengths measured by domains and a total score for the YLS/CMI. The potential for gender differences is explored at both the global and domain level.

#### **Descriptives: Risk and Recidivism Profile of Study Sample**

**Risk profile of sample.** The study sample is profiled according to their mean scores on the YASI, YASI-GI, YLS/CMI, and the PCL:YV, presented in Table 22. There were no significant differences on the total risk, total protective, and total YASI/YASI-GI scores on the full assessment between gender. Comparing the youth on the YLS/CMI, there were also no significant differences between the males and females, where the mean scores were 18.6 and 18.4 respectively. Translating the mean scores of 18.6 and 18.4 (for the males and females respectively), the categorical rating of risk from Hoge and

Andrews (2011)<sup>28</sup> would be a moderate rating. Finally, higher scores on the PCL:YV indicate the presence of a higher number of psychopathic or antisocial traits (Forth et al., 2003) and in this sample of youth, the males ( $M = 16.7$ ) scored significantly higher than the females ( $M = 14.8$ ). The total scores on the PCL:YV for both males and females would translate to a low risk, based on the cutoff values outlined in the PCL:YV scoring guide (Forth et al., 2003)<sup>29</sup>. It should be noted that given the base rate of recidivism among youth in this sample, a higher PCL:YV score would have been expected. It is believed that the student raters as part of the Gendered Pathways Study were reluctant to score youth higher on the PCL:YV and opted for a more conservative and lower score than perhaps was warranted for the youth in this sample (S. Brown, personal communication, May 2017). Further, interrater reliability for the PCL:YV was excellent, however the total scores were consistently low.

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<sup>28</sup> The YLS/CMI is broken down into the following categorical risk scores: Low (0-8), Moderate (9-21), High (23-34) and Very High (35-42).

<sup>29</sup> The PCL:YV can be broken down into low (0-19), medium/intermediate (20-30), and high (30+) risk ratings.

Table 22

*Risk Profile of Sample on Assessment Instruments by Gender*

|                                   | Plausible<br>range | Observed<br>range | Total<br><i>N</i> = 254<br><i>M</i> ( <i>SD</i> ) | Males<br><i>n</i> = 148<br><i>M</i> ( <i>SD</i> ) | Females<br><i>n</i> = 106<br><i>M</i> ( <i>SD</i> ) | <i>r</i> <sup>2</sup> |
|-----------------------------------|--------------------|-------------------|---|---|---|-----------------------|
| YASI pre-screen (PS)              |                    |                   |   |   |   |                       |
| YASI PS total risk score          | 0-68               | 0-47              | 25.4 ( 9.4)                                       | 25.2 ( 9.9)                                       | 25.7 ( 8.8)   | -.47                  |
| YASI PS criminal history total    | 0-21               | 0-18              | 8.2 ( 4.3)  | 8.8 ( 4.3)  | 7.5 ( 4.2)  | -2.44*                |
| YASI PS social history            | 0-47               | 0-39              | 17.3 ( 7.0)                                       | 16.4 ( 7.2)                                       | 18.5 ( 6.6)   | -2.36*                |
| YASI PS total strength            | 0-11               | 0-11              | 3.8 ( 2.7)  | 4.2 ( 2.8)  | 3.3 ( 2.5)  | -2.86*                |
| YASI-GI pre-screen (PS)           |                    |                   |   |   |   |                       |
| YASI-GI PS total risk             | 0-74               | 0-62              | 33.4 (12.3)                                       | 33.2 (12.9)                                       | 33.7 (11.5)   | -.36                  |
| YASI-GI PS total criminal history | 0-21               | 0-18              | 8.2 ( 4.3)  | 8.8 ( 4.3)  | 7.5 ( 4.2)  | -2.44*                |
| YASI-GI PS social history         | 0-53               | 0-55              | 25.3 ( 9.9)                                       | 24.4 (10.3)                                       | 26.5 ( 9.3)   | -1.72                 |
| YASI-GI PS total strength         | 0-16               | 0-14              | 5.6 (3.0)   | 6.0 ( 3.1)  | 5.1 ( 2.8)  | -2.57*                |
| YASI full assessment (FA)         |                    |                   |   |   |   |                       |
| YASI adjusted total score         | -86-113            | -69-76            | 18.8 (27.7)                                       | 17.5 (29.9)                                       | 20.7 (24.3)   | -.93                  |

|                               | Plausible<br>range | Observed<br>range | Total<br><i>N</i> = 254<br><i>M</i> ( <i>SD</i> ) | Males<br><i>n</i> = 148<br><i>M</i> ( <i>SD</i> ) | Females<br><i>n</i> = 106<br><i>M</i> ( <i>SD</i> ) | <i>r</i> <sup>2</sup> |
|-------------------------------|--------------------|-------------------|---|---|---|-----------------------|
| YASI total risk               | 0-113              | 0-92              | 50.4 (17.9)                                       | 50.5 (18.8)                                       | 50.4 (16.7)   | -.02                  |
| YASI total protective         | 0-86               | 0-76              | 32.0 (12.1)                                       | 32.9 (12.6)                                       | 30.6 (11.2)   | -1.55                 |
| YASI-GI full assessment (FA)  |                    |                   |   |   |   |                       |
| YASI-GI total adjusted score  | -113-162           | -82-107           | 22.8 (35.9)                                       | 20.1 (38.4)                                       | 26.5 (32.0)   | -1.44                 |
| YASI-GI total risk            | 162                | 0-127             | 64.1 (23.3)                                       | 63.1 (24.2)                                       | 65.4 (22.0)   | -.78                  |
| YASI-GI total protective      | 113                | 0-92              | 41.7 (15.5)                                       | 43.0 (16.0)                                       | 40.0 (14.6)   | -1.51                 |
| YLS/CMI total score           | 0-42               | 0-34              | 18.5 (6.8)  | 18.6 ( 7.1)                                       | 18.4 ( 6.5)   | -.16                  |
| YLS/CMI total strengths score | 0-7                | 0-6               | 1.2 (1.4)   | 1.3 ( 1.5)  | 1.1 ( 2.8)  | -.81                  |
| PCL:YV total score            | 0-40               | 0-31              | 15.9 (6.6)  | 16.7 ( 6.8)                                       | 14.8 ( 6.0)   | -2.43*                |

*Note.* YASI (Orbis Partners, 2000). YASI-GI (Gender informed; Orbis Partners, 2011). YASI/YASI-GI total adjusted score = YASI/YASI-GI total risk – YASI/YASI-GI total protective. Negative scores on the YASI/YASI-GI total adjusted score indicate a larger total score on strengths than on total risk

\*  $p < .05$ , \*\* $p < .01$ .

**Rate and type of recidivism by gender.** Recidivism base rates are presented in Table 23. Overall, 57.5% of the sample had a new general recidivism event within the 2-year fixed follow up and 40.9% recidivated violently. There was a small significant effect between males and females on both violent and general recidivism rates, with a higher number of males recidivating both generally and violently with the 2-year fixed follow up. In addition, time to failure (i.e., time to first recidivism event) was calculated for both 2-year fixed general and violent recidivism. On average, males were engaged in their first general recidivism event after a mean of 254 days ( $SD = 199$ ) following release, and for females the mean was 257 ( $SD = 174$ ) days; this difference was not significant,  $t^2(105.9) = -.06, p > .05$ . A non-significant difference was also found for the mean number of days before the first violent event – males at 239 days ( $SD = 202$ ) and females at 265 days ( $SD = 193$ ) respectively,  $t^2(56.0) = -.61, p > .05$ .

Table 23

*Rates of 2-Year Fixed General and Violent Recidivism Male and Female Youth in Sample*

|                  | Total Sample   | Male          | Female        |          |      |
|------------------|----------------|---------------|---------------|----------|------|
| Total recidivism | % (n/254)      | % (n/148)     | % (n/106)     | $\chi^2$ | Phi  |
| General          | 57.5 (146/254) | 66.2 (98/148) | 45.3 (48/106) | 11.07**  | -.21 |
| Violent          | 40.9 (104/254) | 50.0 (74/148) | 28.3 (30/106) | 12.03**  | -.22 |

*Note.* General recidivism = includes violent, or any kind of failure not including technical failure (e.g., administration of justice). Violent recidivism = includes offences against the person including homicide, robbery, assault, sexual offence, threats, kidnapping, weapon, or other violent. Males are coded as '0', thus negative phi indicates the rates for males are significantly higher. \* $p < .05$ . \*\* $p < .01$ .

### **Comparative Predictive Validity Across Risk Assessment Instruments**

One measure of predictive validity, discrimination (i.e., relative predictive accuracy), determines whether the scale can reliably discriminate between recidivists and non recidivists. The relative predictive validity of both the original YASI and YASI-GI was measured using point biserial correlations and *AUCs* to predict general and violent recidivism using a 2-year fixed follow up. The results for the bivariate prediction of recidivism at the global level (i.e., total scores) are presented in Tables 24 and 25, while the results for bivariate prediction at the domain and subdomain level follow in Tables 26 and 27.

**Discriminate validity for the YLS/CMI, PCL:YV, YASI (original), and YASI-GI at the global level.** Overall, the results in Tables 24 and 25 indicate that the total scores on the original YASI and the YASI-GI (pre-screen and full assessment) discriminated between recidivists and non recidivists with moderate predictive accuracy

as hypothesized ( $.64 > AUC < .71$ ). The predictive validity results for the YASI and YASI-GI are comparable to the YLS/CMI, and the PCL:YV that also discriminated between recidivists and non recidivists in this sample with moderate predictive accuracy for general recidivism. Interestingly, the YASI and YASI-GI (pre-screen and full assessment) predicted general recidivism with moderate accuracy for the males (smaller effects were observed for the girls and general recidivism) and predicted violent recidivism with moderate accuracy for both the males and the females. Contrary to the stated hypothesis, the *AUC* values reported for the males on the gender informed version of the YASI (YASI-GI) are slightly higher for the males than the predictive results for the original YASI, with a large effect found for the total adjusted score on the YASI-GI ( $AUC = .71$ ) for the males and general recidivism. Similarly, the total scores on the YASI-GI were lower in predictive accuracy than the predictive accuracy of the total scores for the females on the original YASI (for both pre-screen and full assessment). As well, the YASI-GI pre-screen and full assessment were not greater in predictive accuracy for the females when compared to the *AUC* values reported for both the YLS/CMI and PCL:YV as anticipated, however were comparable in magnitude with moderate effects. When the total protective scores are examined for both the pre-screen and the full assessment, moderate effects are observed for the males while the effects for females are smaller in magnitude. Given that the confidence intervals between the males and females overlap, conclusions regarding a significant difference in magnitude however cannot be made. For the pre-screen for both the YASI and YASI-GI the pre-screen total protective score did not have much of an effect on the prediction of either general or violent recidivism. This finding is not entirely unexpected given there are few protective items

that are measured with the pre-screen for either the original YASI or the gender informed version (YASI-GI) and as such is not used for planning purposes in practice (N. Jones personal communication, May 2016).

Interestingly the YLS/CMI and PCL:YV demonstrated greater predictive accuracy for the females and violent recidivism ( $AUC = .74$ ), a large effect, while the PCL:YV was not significant for the males and violent recidivism (CI contained .5 – equivalent or no better than chance as predictor). Similar to the results for general recidivism, the original YASI and the gender informed YASI both moderately predicted violent recidivism for both males and females ( $AUC > .64$ ). The original YASI total adjusted score emerged as a large effect in the prediction of violent recidivism for the females ( $AUC = .71$ ), compared to the males ( $AUC = .67$ ). Contrary to what was expected, the predictive accuracy for females and violent recidivism based on the total scores for the YASI-GI were slightly lower than the  $AUC$ s for the original YASI ( $AUC = .69$ ) for the total adjusted risk score on the YASI-GI compared to the total adjusted risk score on the original YASI ( $AUC = .71$ ). Results for the pre-screen for the both the original YASI and the YASI-GI are comparable, with the total risk score moderately predictive of violent recidivism for both males and females. Similar to the results for general recidivism, the total protective score for the both the YASI pre-screen and the YASI-GI pre-screen were not significantly predictive of violent recidivism for the females (CI contained .5), while small effects were found for the males. Contrary to the stated hypothesis, the gender informed YASI did not outperform the original YASI for the prediction of violent recidivism for females (predictive accuracy was slightly lower for the YASI-GI model for the females).

At the global level, the original YASI and the gender informed version of the YASI emerged as valid risk assessment measures for the prediction of general and violent recidivism with moderate predictive accuracy ( $.64 < AUC < .71$ ) as hypothesized. As well, the predictive accuracy of both the YASI and the YASI-GI were comparable to the YLS/CMI and PCL:YV. The hypothesis that the YASI-GI would emerge with greater predictive accuracy than original YASI for females, due to the inclusion of gender responsive variables in the YASI-GI, was not supported. In fact, a large effect was found for females on the original YASI total adjusted risk score and the prediction of violent recidivism compared to a moderate effect for the YASI-GI.

Table 24

*Bivariate Predictive Validity of Total Scale Scores for General Recidivism Using 2-Year Fixed Follow Up by Gender*

|   | Total    |                       |            |               | Males    |                       |            |               | Females  |                       |            |               |
|---|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|   | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> |
| YLS/CMI total score                       | 250      | .31**                 | .68        | [.61, .74]    | 148      | .32**                 | .68        | [.59, .77]    | 102      | .31**                 | .68        | [.58, .79]    |
| PCL:YV total score                        | 251      | .26**                 | .64        | [.57, .71]    | 148      | .23**                 | .63        | [.53, .72]    | 103      | .25**                 | .63        | [.53, .74]    |
| <i>Original YASI pre-screen (PS)</i>      |          |                       |            |               |          |                       |            |               |          |                       |            |               |
| YASI PS total risk score                  | 254      | .27**                 | .65        | [.58, .72]    | 148      | .33**                 | .68        | [.59, .78]    | 106      | .21*                  | .62        | [.51, .72]    |
| YASI PS total protective score            | 252      | -.11                  | .55        | [.48, .62]    | 148      | -.19*                 | .61        | [.51, .70]    | 104      | -.08                  | .52        | [.41, .63]    |
| <i>Original YASI full assessment (FA)</i> |          |                       |            |               |          |                       |            |               |          |                       |            |               |
| YASI adjusted total risk score            | 252      | .30**                 | .66        | [.59, .73]    | 148      | .37**                 | .70        | [.61, .80]    | 104      | .25                   | .64        | [.54, .75]    |
| YASI total risk score                     | 254      | .28**                 | .65        | [.58, .72]    | 148      | .33**                 | .69        | [.60, .78]    | 106      | .22*                  | .62        | [.51, .73]    |
| YASI total protective score               | 252      | -.28**                | .64        | [.57, .71]    | 148      | -.37**                | .69        | [.60, .79]    | 104      | -.21*                 | .62        | [.51, .73]    |
| <i>YASI-GI pre-screen (PS)</i>            |          |                       |            |               |          |                       |            |               |          |                       |            |               |
| YASI-GI PS total risk score               | 254      | .24**                 | .63        | [.57, .70]    | 148      | .28**                 | .66        | [.57, .75]    | 106      | .20*                  | .61        | [.50, .72]    |
| YASI-GI PS total protective score         | 253      | -.13*                 | .56        | [.49, .64]    | 148      | -.22**                | .62        | [.52, .72]    | 105      | -.09                  | .54        | [.43, .65]    |
| <i>YASI-GI full assessment (FA)</i>       |          |                       |            |               |          |                       |            |               |          |                       |            |               |
| YASI-GI FA adjusted total risk score      | 252      | .27**                 | .65        | [.58, .72]    | 148      | .36**                 | .71        | [.61, .80]    | 104      | .21*                  | .63        | [.52, .73]    |
| YASI-GI total risk score                  | 254      | .24**                 | .63        | [.56, .70]    | 148      | .31**                 | .69        | [.60, .78]    | 106      | .18                   | .60        | [.50, .71]    |
| YASI-GI total protective score            | 252      | -.28**                | .64        | [.57, .72]    | 148      | -.38**                | .70        | [.61, .80]    | 104      | -.19                  | .60        | [.50, .71]    |

*Note.* Original YASI (Orbis Partners, 2000). YASI-GI (Gender informed; Orbis Partners, 2011). Adjusted total risk score = Total risk score – Total protective score. *r<sub>pb</sub>* = Pearson point biserial correlation. *AUC* = area under receiver operator characteristic (ROC) curve. 95% *CI* = confidence interval [upper limit, lower limit] for *AUC*. \* *p* < .05, \*\**p* < .01.

Table 25

*Bivariate Predictive Validity of Total Scale Scores for Violent Recidivism Using 2-Year Fixed Follow Up by Gender*

|   | Total    |                       |            |               | Males    |                       |            |               | Females  |                       |            |               |
|---|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|   | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> |
| YLS/CMI total score                       | 250      | .27**                 | .66        | [.59, .73]    | 148      | .23**                 | .62        | [.53, .71]    | 102      | .37**                 | .74        | [.63, .84]    |
| PCL:YV total score                        | 251      | .21**                 | .62        | [.55, .69]    | 148      | .09                   | .54        | [.45, .63]    | 103      | .37**                 | .74        | [.64, .84]    |
| <i>Original YASI pre-screen (PS)</i>      |          |                       |            |               |          |                       |            |               |          |                       |            |               |
| YASI PS total risk score                  | 254      | .24**                 | .64        | [.57, .71]    | 148      | .25**                 | .64        | [.55, .72]    | 106      | .28**                 | .67        | [.55, .79]    |
| YASI PS total protective score            | 252      | -.12                  | .56        | [.49, .63]    | 148      | -.23*                 | .63        | [.54, .72]    | 104      | -.04                  | .51        | [.39, .64]    |
| <i>Original YASI full assessment (FA)</i> |          |                       |            |               |          |                       |            |               |          |                       |            |               |
| YASI FA adjusted total risk score         | 252      | .29**                 | .67        | [.60, .73]    | 148      | .29**                 | .67        | [.58, .75]    | 104      | .33**                 | .71        | [.61, .82]    |
| YASI FA total risk score                  | 254      | .27**                 | .66        | [.59, .73]    | 148      | .26**                 | .65        | [.56, .74]    | 106      | .31**                 | .70        | [.59, .81]    |
| YASI FA total protective score            | 252      | -.21**                | .61        | [.54, .68]    | 148      | -.32**                | .66        | [.57, .75]    | 104      | -.22*                 | .64        | [.53, .75]    |
| <i>YASI-GI pre-screen (PS)</i>            |          |                       |            |               |          |                       |            |               |          |                       |            |               |
| YASI-GI PS total risk score               | 254      | .24**                 | .64        | [.57, .71]    | 148      | .23**                 | .62        | [.53, .71]    | 106      | .29**                 | .68        | [.56, .80]    |
| YASI-GI PS total protective score         | 253      | -.15*                 | .58        | [.51, .65]    | 148      | -.25**                | .63        | [.55, .72]    | 105      | -.09                  | .55        | [.43, .68]    |
| <i>YASI-GI full assessment (FA)</i>       |          |                       |            |               |          |                       |            |               |          |                       |            |               |
| YASI-GI FA adjusted total risk score      | 252      | .26                   | .65        | [.58, .72]    | 148      | .29**                 | .66        | [.58, .75]    | 104      | .29**                 | .69        | [.58, .79]    |
| YASI-GI FA total risk score               | 254      | .23**                 | .64        | [.57, .71]    | 148      | .24**                 | .65        | [.56, .74]    | 106      | .27*                  | .68        | [.57, .79]    |
| YASI-GI FA total protective score         | 252      | -.25**                | .63        | [.56, .70]    | 148      | -.33**                | .67        | [.58, .75]    | 104      | -.19                  | .61        | [.50, .72]    |

*Note.* Original YASI (Orbis Partners, 2000). YASI-GI (Gender informed; Orbis Partners, 2011). Adjusted total risk score = Total risk score – Total protective score. *r<sub>pb</sub>* = Pearson point biserial correlation. *AUC* = area under receiver operator characteristic (ROC) curve. 95% CI = confidence interval [upper limit, lower limit) for *AUC*. \* *p* < .05, \*\**p* < .01.

**Absolute Predictive Validity (i.e., Calibration) Across Risk Assessment Instruments**

Another mechanism to measure the predictive validity of a risk scale is through calibration or absolute predictive validity. Calibration is a measure of concordance between observed rates of recidivism compared to expected rates of recidivism (Hanson, 2017; Helmus & Babchishin, 2017; Singh, 2013). One measure to assess calibration is the E/O index, which refers to the expected number of recidivists compared to the observed number of recidivists (Hanson, 2017). An E/O index of 1 indicates perfect calibration, while a value below 1 signals that the expected number of recidivists was lower than the observed number of recidivists, and a value above 1 signals that the expected number of recidivists was higher than the observed number of recidivists (Hanson, 2017). Importantly, to calculate the E/O index, the expected number of recidivists is typically reported for normative data from the developers of a scale (Hanson, 2017). To evaluate the calibration of the YASI scales in this study however, calculation of E/O index was not possible as there are no reported normative data available for the YASI models to date. Thus, calibration of the YASI and YASI-GI was assessed by observing the degree to which a linear relationship emerged between the total risk scores and the probability and observed rates of recidivism for the sample study. For consistency and comparative purposes, calibration of the YLS/CMI and PCL:YV was assessed in the same way. For the YASI and the YASI-GI, the total risk scores for the pre-screen and the full assessment were trichotomized for the purposes of calibration. The total risk scores were recoded as low, moderate, and high based on a 1/3 distribution of the sample into each risk bin (low, moderate, and high). Normative cutoff scores were used for the YLS/CMI and PCL:YV in the determination of low, moderate, and high risk individuals for calibration. Figures 3 through 14 present the calibration results for each of the risk

assessment measures YLS/CMI total risk score, PCL:YV total risk score, original YASI pre-screen total risk score, original YASI full assessment total risk score, YASI-GI pre-screen total risk score, and YASI-GI full assessment total risk score, respectively for general recidivism. For each assessment measure, the total risk score was plotted against the observed general recidivism, followed by a plot of the total risk score and the predictive probability of general recidivism.

Overall, as demonstrated in the figures all risk assessment measures at the global level demonstrated a linear progression in the number of recidivists (or the probability of recidivism) as the total score on the risk assessment measure increased. Thus, all measures at the global level demonstrated good calibration with general recidivism as hypothesized. Specifically, Figures 3 through 6 demonstrate the YLS/CMI and PCL:YV are well calibrated with general recidivism for the youth in this sample. Similarly, Figures 7 through 14 demonstrate that both the pre-screen and full assessment for the original YASI and the gender informed version of the YASI (YASI-GI) are well calibrated with general recidivism. A similar pattern of results emerged for violent recidivism and is provided in Appendix I.

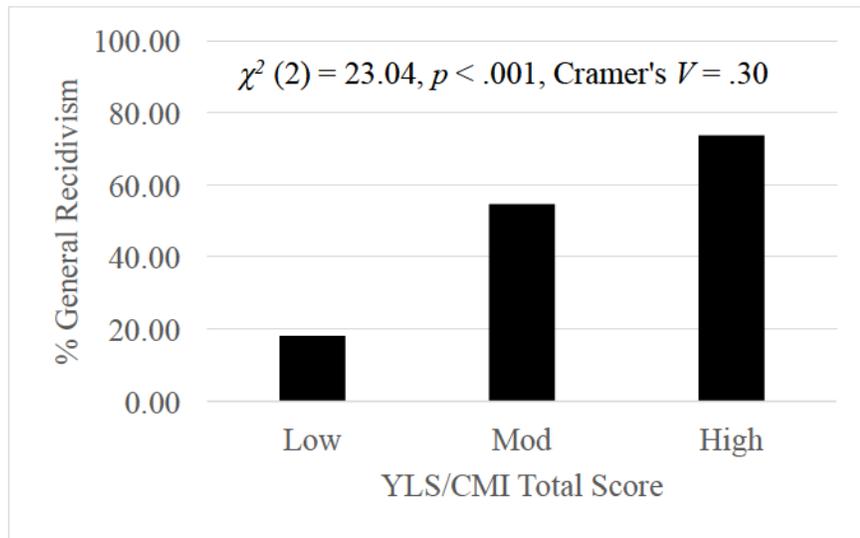


Figure 3. Percentage of General Recidivists at Each Level of the YLS/CMI Total Score  
(Total Sample)

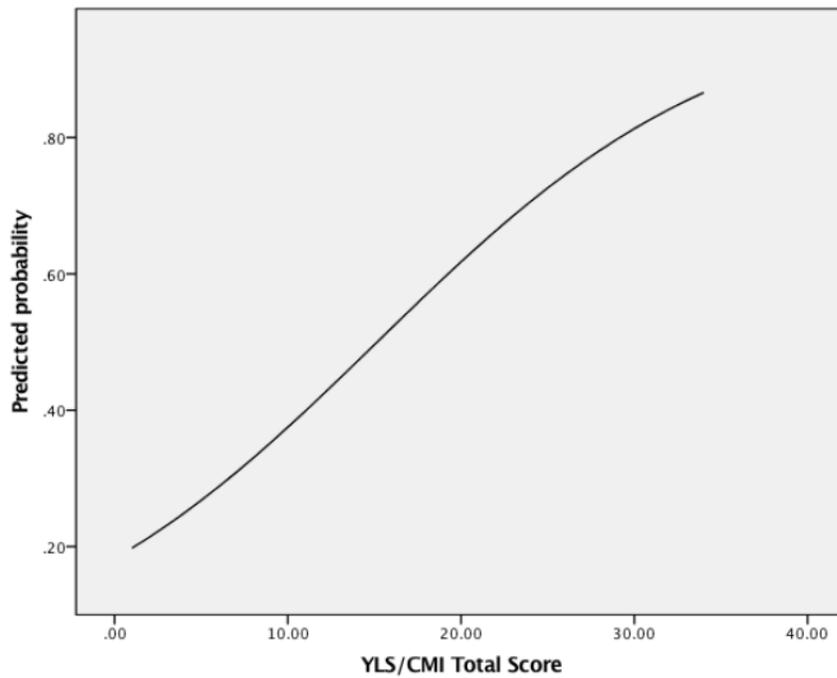


Figure 4. Predicted Probability of General Recidivism and YLS/CMI Total Score  
(Total Sample)

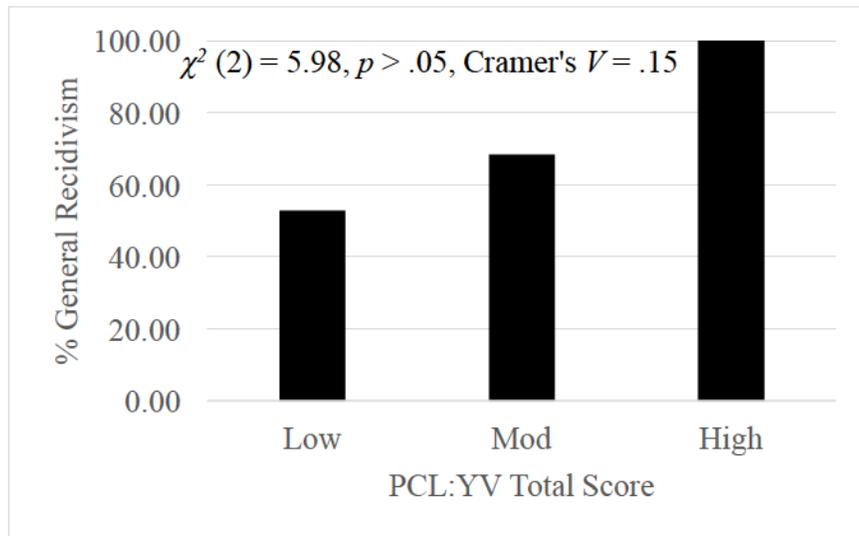


Figure 5. Percentage of General Recidivists at Each Level of the PCL:YV Total Score

(Total Sample)

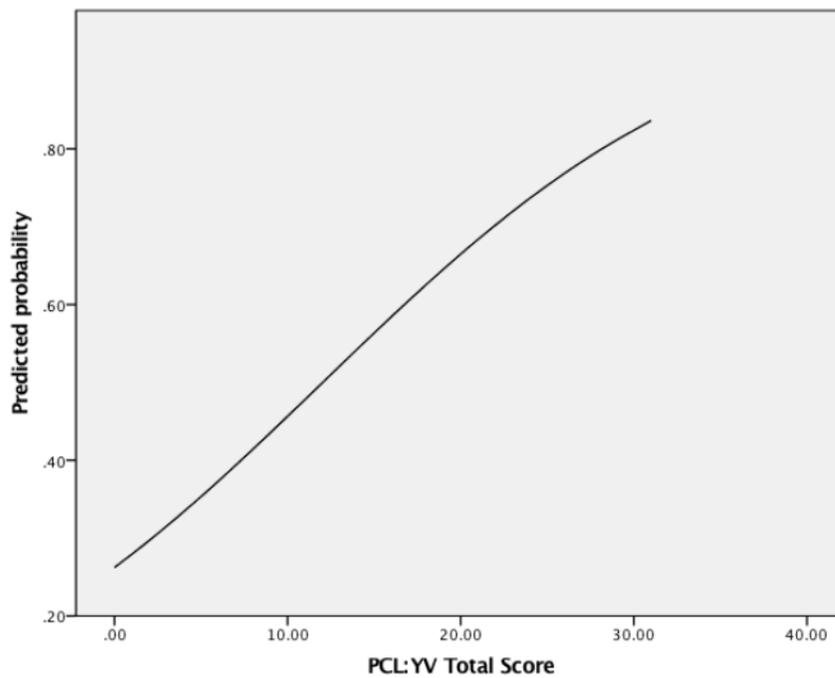


Figure 6. Predicted Probability of General Recidivism and PCL:YV Total Score

(Total Sample)

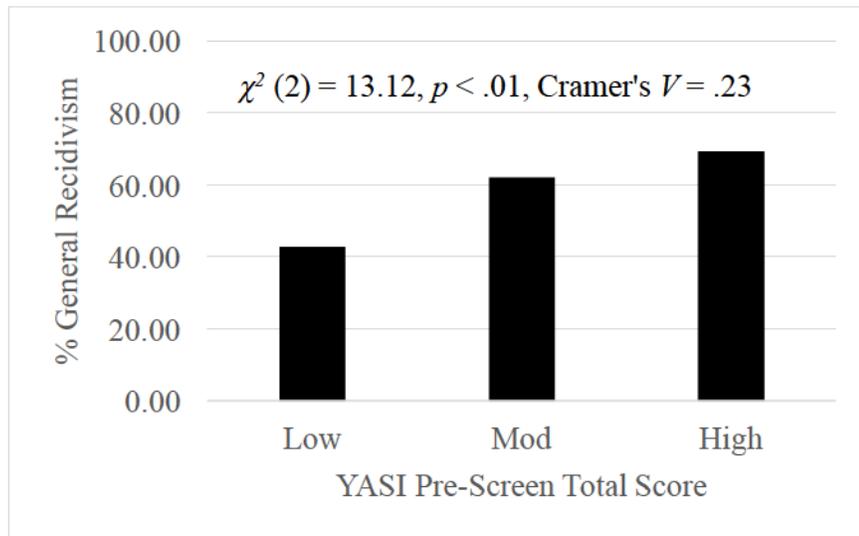


Figure 7. Percentage of General Recidivists at Each Level of the YASI Pre-Screen Total Risk Score (Total Sample)

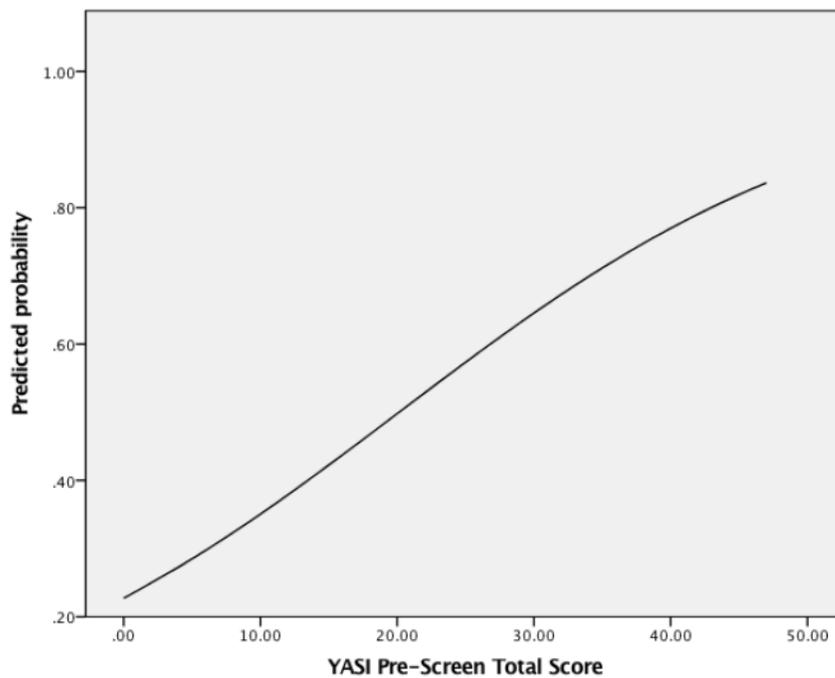


Figure 8. Predicted Probability of General Recidivism and YASI Pre-Screen Total Risk Score (Total Sample)

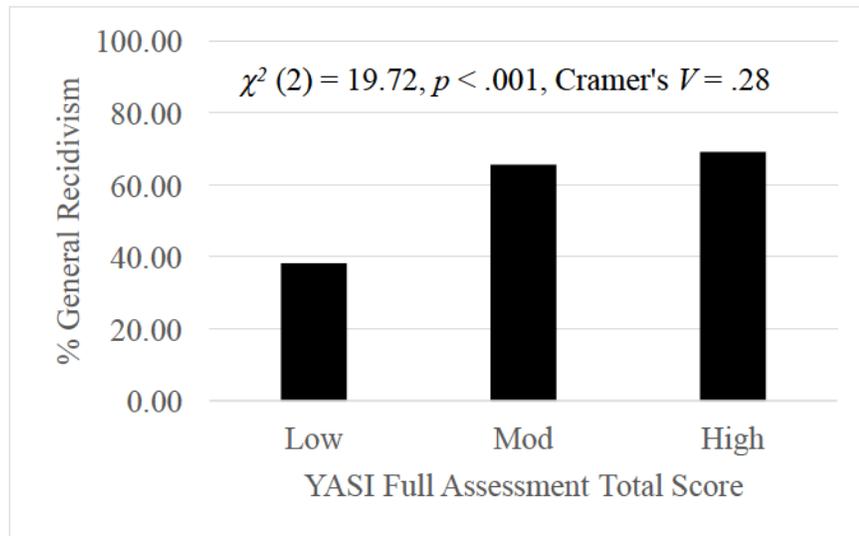


Figure 9. Percentage of General Recidivists at Each Level of the YASI Full Assessment

Adjusted Total Risk Score (Total Sample)

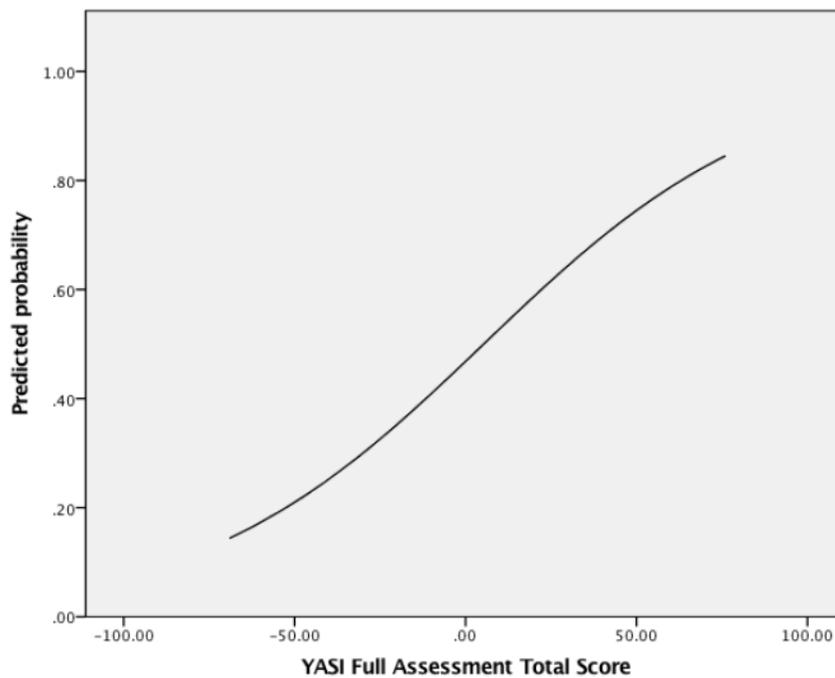


Figure 10. Predicted Probability of General Recidivism and YASI Full Assessment

Adjusted Total Risk Score (Total Sample)

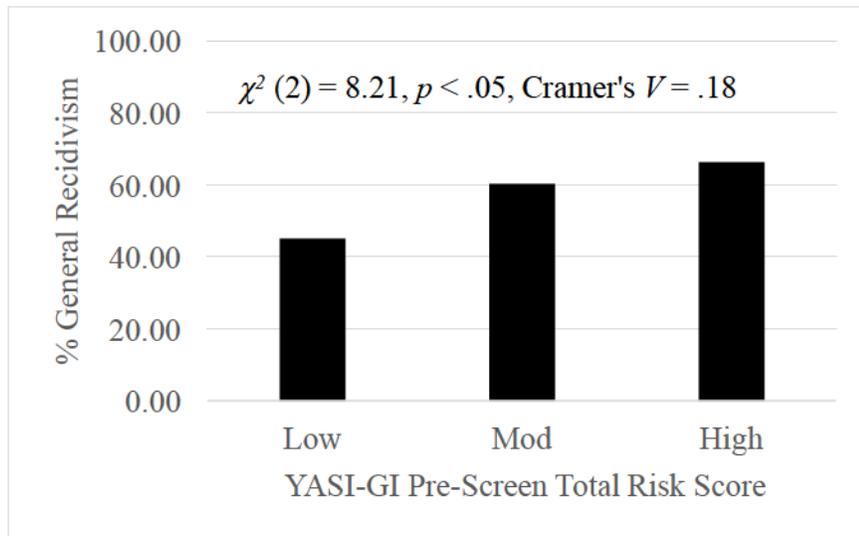


Figure 11. Percentage of General Recidivists at Each Level of the YASI-GI Pre-Screen Total Risk Score (Total Sample)

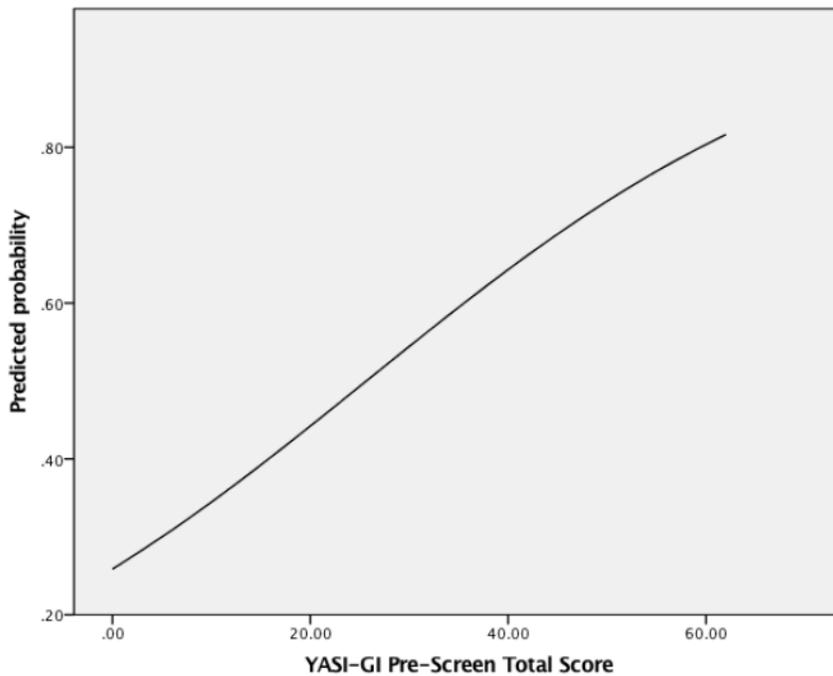


Figure 12. Predicted Probability of General Recidivism and YASI-GI Pre-Screen Total Risk Score (Total Sample)

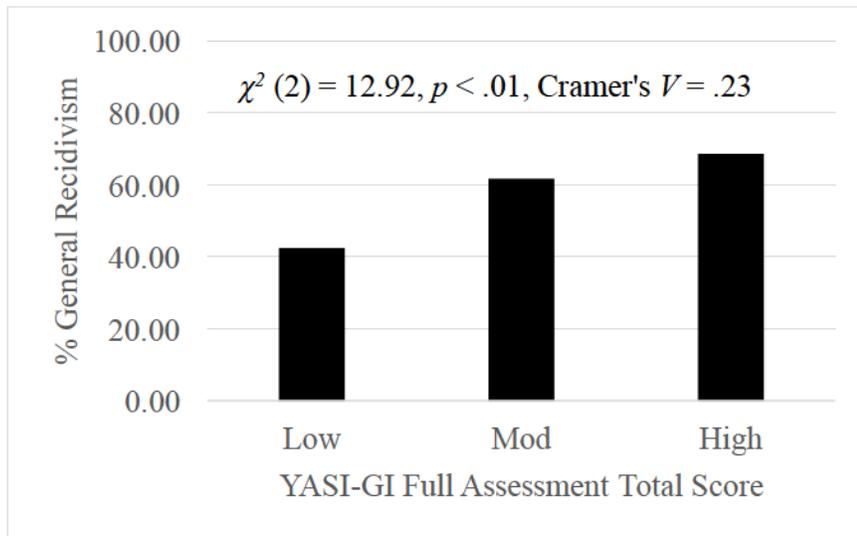


Figure 13. Percentage of General Recidivists at Each Level of the YASI-GI Full Assessment Adjusted Total Risk Score (Total Sample)

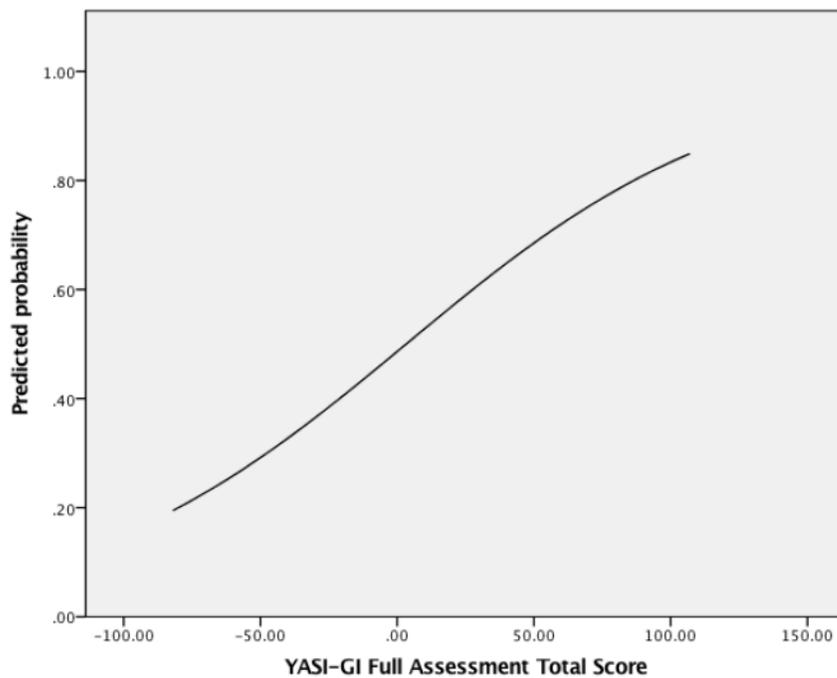


Figure 14. Predicted Probability of General Recidivism and YASI-GI Full Assessment Adjusted Total Risk Score (Total Sample)

### **Discriminate Validity for the YLS/CMI, PCL:YV, Original YASI and YASI-GI at the Domain Level**

Discriminate validity of the assessment measures was also examined at the level of the domains and subdomains. Bivariate predictive accuracy is presented using point biserial correlations and *AUCs* in Tables 26 and 27 for general and violent recidivism respectively. As there were hypothesized gender differences expected, consideration for domains and subdomains as gender salient, gender specific, and gender neutral were made. Gender saliency was defined as domain (or subdomain) that was predictive for both males and females, however there was a larger effect for one gender over the other (determined by non overlapping confidence intervals between the genders<sup>30</sup>). Gender specific was defined as a domain or subdomain that was predictive for one gender but not the other. Domains and subdomains were determined to be gender neutral if they were equally predictive for both males and females.

*Discriminate validity of domains and general recidivism.* For comparative purposes bivariate predictive accuracy was examined for the YLS/CMI and PCL:YV at the domain level for both males and females. From Table 26, seven of the eight domains are significantly predictive of general recidivism for males. Most domains were moderately predictive, with the exception of leisure/recreation (*AUC* = .58) and personality (*AUC* = .59) which were small effects. The criminal history, education/employment, and leisure/recreation were significantly predictive for males however not significant for females (CI contained zero)

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<sup>30</sup> It should be noted that given confidence intervals are naturally inversely related to sample size provides a real disadvantage for work seeking to study gender differences with inherently small samples of female offenders.

suggesting criminal history, education/employment, and leisure/recreation to be male specific, consistent with others that have stated similar relevance of these domains for males (Bonta & Andrews, 2017; Olver et al., 2014). For the females, four of the domains emerged as significant – antisocial peers ( $AUC = .69$ ), substance abuse ( $AUC = .66$ ), antisocial attitudes ( $AUC = .71$ ), and antisocial personality ( $AUC = .61$ ). For the PCL:YV, two factors – affective and antisocial emerged as significant predictors of general recidivism with the antisocial factor as a moderate effect for males ( $AUC = .65$ ) and females ( $AUC = .68$ ). When the bivariate results of the YLS/CMI and PCL:YV were compared to the results for YASI and YASI-GI, at domain level there were some interesting differences that emerged for the domains that were predictive of general recidivism for the males and the females.

From Table 26, for both the males and the females, the overall domains for criminal history and social networks were significantly predictive of general recidivism. Specifically, for the social networks domain there was a moderate effect for the females ( $AUC = .70$ ) and the males ( $AUC = .63$ ); though the overlapping confidence intervals do not suggest social networks is female salient, rather that social networks is gender neutral. Second, many of the domains were significant for the males but not for the females and as such can be considered male specific within this sample – family history, education, substance use, attitudes, and social/cognitive skills. It was hypothesized that substance abuse, family history, mental health, and social networks would emerge as female salient, however only one of these domains was significant for females and general recidivism – social networks, though this was also significant for males thus suggesting social networks is gender neutral in predicting general recidivism for both males and males. The finding of social networks as a gender neutral factor in the prediction of recidivism is also consistent with the observed significance

of the peers domain of the YLS/CMI for both males and females for general recidivism.

With the exception of criminal history and social networks, none other domains of the YASI and YASI-GI full assessment were significantly predictive of general recidivism for females – family history, school, substance use, attitudes, violence and aggression (with the exception of the static subdomain), employment and free time, mental health, and social/cognitive skills were not significant (CI contained .5). It was surprising that the domains of family history and substance use were not significantly predictive of general recidivism given the importance posited by theory and research (Blanchette & Brown, 2006; Bloom et al., 2003; Gobeil et al., 2016; Salisbury & Van Voorhis, 2009; Van Voorhis, 2012). It is possible that the items within the domains are not capturing the essence of the female experience. For example, the items in the family domain for the YASI and YASI-GI include items such as living arrangements, compliance with parental rules, parental supervision, and parenting, however they do not address factors such as dysfunctional family relationships, unsafe housing, and violence within the family that are posited to be influential in offending among women and girls (Bloom et al., 2003; Blanchette & Brown, 2006). It is also possible that the importance of the interconnection of the variables (Bloom et al., 2003; Brennan et al., 2008; Chesney-Lind & Shelden, 2004; Johansson & Kempf-Leonard, 2009; McClelland et al., 1997) is not being considered in the statistical models as the factors are being considered in isolation of other variables in bivariate analysis.

Table 26

*Bivariate Predictive Validity of Domain Level Scores for General Recidivism Using 2-Year Fixed Follow Up by Gender*

|                        | Total    |                       |            |               | Males    |                       |            |               | Females  |                       |            |               |
|------------------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|                        | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> |
| <i>YLS/CMI domains</i> |          |                       |            |               |          |                       |            |               |          |                       |            |               |
| Criminal history       | 250      | .29**                 | .67        | [.60, .74]    | 148      | .31**                 | .68        | [.58, .77]    | 102      | .19                   | .61        | [.50, .72]    |
| Family history         | 250      | .06                   | .54        | [.46, .61]    | 148      | .14                   | .58        | [.49, .68]    | 102      | .08                   | .54        | [.43, .66]    |
| Education/employment   | 250      | .17**                 | .60        | [.53, .67]    | 148      | .23**                 | .64        | [.55, .74]    | 102      | .12                   | .56        | [.45, .68]    |
| Antisocial peers       | 250      | .29**                 | .66        | [.59, .73]    | 148      | .22**                 | .64        | [.54, .73]    | 102      | .36**                 | .69        | [.59, .80]    |
| Leisure/recreation     | 250      | .18**                 | .60        | [.53, .67]    | 148      | .17*                  | .58        | [.48, .68]    | 102      | .16                   | .59        | [.48, .70]    |
| Substance abuse        | 249      | .26**                 | .65        | [.58, .72]    | 147      | .23**                 | .64        | [.54, .73]    | 102      | .28**                 | .66        | [.55, .76]    |
| Antisocial personality | 250      | .17**                 | .59        | [.52, .66]    | 148      | .17*                  | .59        | [.49, .69]    | 102      | .21*                  | .61        | [.51, .72]    |
| Antisocial attitudes   | 249      | .33**                 | .69        | [.62, .75]    | 148      | .27**                 | .66        | [.57, .75]    | 101      | .37**                 | .71        | [.61, .81]    |
| <i>PCL:YV domains</i>  |          |                       |            |               |          |                       |            |               |          |                       |            |               |
| F1: Interpersonal      | 251      | .10                   | .56        | [.49, .63]    | 148      | .12                   | .57        | [.48, .67]    | 103      | .06                   | .54        | [.43, .65]    |
| F2: Affective          | 251      | .20**                 | .61        | [.54, .68]    | 148      | .16*                  | .59        | [.49, .69]    | 103      | .22*                  | .63        | [.52, .74]    |
| F3: Behavioural        | 251      | .15*                  | .58        | [.51, .65]    | 148      | .13                   | .58        | [.48, .68]    | 103      | .15                   | .58        | [.47, .69]    |
| F4: Antisocial         | 251      | .33**                 | .69        | [.62, .76]    | 148      | .30**                 | .65        | [.55, .75]    | 103      | .30**                 | .68        | [.57, .78]    |

|  | Total    |                       |            |               | Males    |                       |            |               | Females  |                       |            |               |
|--|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|  | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> |
| <i>Original YASI pre-screen domains</i>      |          |                       |            |               |          |                       |            |               |          |                       |            |               |
| Criminal history                             | 254      | .35**                 | .70        | [.63, .76]    | 148      | .35**                 | .69        | [.60, .79]    | 106      | .31**                 | .67        | [.57, .77]    |
| Social history                               | 253      | .13*                  | .57        | [.50, .64]    | 148      | .24**                 | .63        | [.54, .73]    | 105      | .06                   | .54        | [.42, .65]    |
| <i>Original YASI full assessment domains</i> |          |                       |            |               |          |                       |            |               |          |                       |            |               |
| Criminal history total risk                  | 254      | .35**                 | .70        | [.63, .76]    | 148      | .35**                 | .69        | [.60, .79]    | 106      | .31**                 | .67        | [.57, .77]    |
| Family history total risk                    | 253      | -.01                  | .49        | [.42, .57]    | 148      | .22**                 | .65        | [.55, .74]    | 105      | -.13                  | .43        | [.32, .54]    |
| Family history static risk                   | 253      | -.04                  | .48        | [.40, .55]    | 148      | .16                   | .59        | [.50, .69]    | 105      | -.09                  | .45        | [.34, .56]    |
| Family history dynamic risk                  | 253      | .02                   | .51        | [.44, .59]    | 148      | .20*                  | .63        | [.54, .72]    | 105      | -.09                  | .44        | [.33, .55]    |
| School total risk                            | 251      | .14*                  | .59        | [.52, .66]    | 148      | .23**                 | .65        | [.56, .75]    | 103      | .03                   | .52        | [.40, .63]    |
| School static risk                           | 251      | .14*                  | .58        | [.51, .65]    | 148      | .12                   | .56        | [.46, .66]    | 103      | .12                   | .56        | [.45, .68]    |
| School dynamic risk                          | 251      | .10                   | .56        | [.49, .63]    | 148      | .23**                 | .65        | [.55, .74]    | 103      | -.02                  | .48        | [.37, .59]    |
| Social networks total risk                   | 251      | .29**                 | .67        | [.60, .74]    | 148      | .22**                 | .63        | [.53, .72]    | 103      | .33**                 | .70        | [.60, .80]    |
| Social networks static risk                  | 244      | .05                   | .52        | [.44, .59]    | 143      | -.02                  | .48        | [.38, .58]    | 101      | .10                   | .54        | [.43, .66]    |
| Social networks dynamic risk                 | 251      | .30**                 | .67        | [.60, .74]    | 148      | .24**                 | .63        | [.54, .73]    | 103      | .33**                 | .70        | [.59, .80]    |

|                                      | Total    |                       |            |               | Males    |                       |            |               | Females  |                       |            |               |
|--------------------------------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|                                      | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> |
| Mental health total risk             | 250      | -.17**                | .41        | [.34, .48]    | 148      | -.09                  | .47        | [.36, .57]    | 104      | -.10                  | .44        | [.33, .55]    |
| Mental health static risk            | 250      | -.18**                | .40        | [.33, .47]    | 148      | -.11                  | .45        | [.35, .56]    | 104      | -.10                  | .45        | [.33, .56]    |
| Mental health dynamic risk           | 250      | -.08                  | .47        | [.40, .54]    | 147      | -.11                  | .46        | [.36, .56]    | 103      | .04                   | .52        | [.41, .63]    |
| Substance use total risk             | 250      | .24**                 | .64        | [.57, .71]    | 147      | .28**                 | .68        | [.59, .77]    | 103      | .17                   | .60        | [.49, .71]    |
| Substance use static risk            | 250      | .14*                  | .58        | [.50, .65]    | 147      | .16                   | .59        | [.49, .69]    | 103      | .11                   | .56        | [.45, .68]    |
| Substance use dynamic risk           | 250      | .23**                 | .63        | [.56, .70]    | 147      | .27**                 | .67        | [.58, .76]    | 103      | .16                   | .59        | [.48, .70]    |
| Attitudes total risk                 | 252      | .22**                 | .62        | [.55, .69]    | 148      | .24**                 | .64        | [.55, .74]    | 104      | .17                   | .60        | [.48, .71]    |
| Attitudes static risk                | 249      | .03                   | .52        | [.45, .60]    | 145      | .06                   | .54        | [.44, .64]    | 104      | -.06                  | .48        | [.37, .59]    |
| Attitudes dynamic risk               | 252      | .22**                 | .63        | [.56, .70]    | 148      | .25**                 | .65        | [.56, .74]    | 104      | .19                   | .61        | [.50, .72]    |
| Social/cognitive skills total risk   | 251      | .09                   | .57        | [.49, .64]    | 148      | .13                   | .59        | [.50, .69]    | 103      | .06                   | .55        | [.43, .66]    |
| Social/cognitive skills dynamic risk | 251      | .09                   | .57        | [.49, .64]    | 148      | .13                   | .59        | [.50, .69]    | 103      | .06                   | .55        | [.43, .66]    |
| Employ. & free time total risk       | 251      | .02                   | .50        | [.43, .58]    | 148      | .09                   | .55        | [.45, .64]    | 103      | -.18                  | .41        | [.30, .52]    |
| Employ. & free time static risk      | 250      | -.02                  | .50        | [.43, .57]    | 147      | .05                   | .53        | [.43, .63]    | 103      | -.18                  | .44        | [.33, .55]    |
| Employ. & free time dynamic risk     | 251      | .03                   | .51        | [.44, .59]    | 148      | .08                   | .55        | [.45, .64]    | 103      | -.09                  | .44        | [.33, .56]    |

|  | Total    |                       |            |               | Males    |                       |            |               | Females  |                       |            |               |
|--|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|  | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> |
| Violence & aggression total risk       | 250      | .20**                 | .61        | [.54, .68]    | 147      | .19*                  | .61        | [.51, .71]    | 103      | .20*                  | .60        | [.48, .71]    |
| Violence & aggression static risk      | 250      | .20**                 | .62        | [.55, .69]    | 147      | .18*                  | .62        | [.52, .71]    | 103      | .19                   | .59        | [.48, .70]    |
| Violence & aggression dynamic risk     | 250      | .16*                  | .59        | [.52, .66]    | 147      | .21**                 | .63        | [.53, .72]    | 103      | .12                   | .57        | [.46, .68]    |
| <i>YASI-GI pre-screen domains</i>      |          |                       |            |               |          |                       |            |               |          |                       |            |               |
| Criminal history                       | 254      | .35**                 | .70        | [.63, .76]    | 148      | .35**                 | .69        | [.60, .79]    | 106      | .31**                 | .67        | [.57, .77]    |
| Social history                         | 253      | .13*                  | .57        | [.50, .64]    | 148      | .21*                  | .62        | [.53, .72]    | 105      | .08                   | .54        | [.43, .66]    |
| <i>YASI-GI full assessment domains</i> |          |                       |            |               |          |                       |            |               |          |                       |            |               |
| Criminal history total risk            | 254      | .35**                 | .70        | [.63, .76]    | 148      | .35**                 | .69        | [.60, .79]    | 106      | .31**                 | .67        | [.57, .77]    |
| Family history total risk              | 253      | -.00                  | .50        | [.42, .57]    | 148      | .21*                  | .64        | [.54, .73]    | 105      | -.10                  | .44        | [.33, .55]    |
| Family history static risk             | 253      | -.04                  | .48        | [.40, .55]    | 148      | .16                   | .59        | [.50, .69]    | 105      | -.09                  | .45        | [.34, .56]    |
| Family history dynamic risk            | 253      | .03                   | .51        | [.44, .58]    | 148      | .21*                  | .62        | [.53, .72]    | 105      | -.07                  | .45        | [.34, .56]    |
| School total risk                      | 251      | .15*                  | .59        | [.52, .66]    | 148      | .24**                 | .65        | [.56, .75]    | 103      | .04                   | .52        | [.41, .63]    |
| School static risk                     | 251      | .14*                  | .58        | [.51, .65]    | 148      | .12                   | .56        | [.46, .66]    | 103      | .12                   | .56        | [.45, .68]    |
| School dynamic risk                    | 251      | .12                   | .57        | [.50, .64]    | 148      | .23                   | .65        | [.55, .74]    | 103      | -.01                  | .49        | [.38, .61]    |

|                                    | Total    |                       |            |               | Males    |                       |            |               | Females  |                       |            |               |
|------------------------------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|                                    | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> |
| Social networks total risk         | 252      | .25**                 | .65        | [.58, .72]    | 148      | .21*                  | .63        | [.53, .72]    | 104      | .28**                 | .67        | [.56, .77]    |
| Social network static risk         | 246      | .08                   | .54        | [.46, .61]    | 148      | .22**                 | .47        | [.37, .57]    | 103      | .33**                 | .59        | [.48, .70]    |
| Social network dynamic risk        | 252      | .27**                 | .66        | [.59, .73]    | 148      | .25**                 | .65        | [.55, .74]    | 104      | .29**                 | .67        | [.57, .78]    |
| Mental health total risk           | 254      | -.19**                | .40        | [.33, .47]    | 148      | -.08                  | .48        | [.38, .58]    | 106      | -.14                  | .42        | [.31, .54]    |
| Mental health static risk          | 254      | -.20**                | .39        | [.32, .46]    | 148      | -.11                  | .47        | [.36, .57]    | 106      | -.13                  | .43        | [.31, .54]    |
| Mental health dynamic risk         | 252      | -.10                  | .44        | [.37, .51]    | 148      | .01                   | .51        | [.41, .61]    | 104      | -.11                  | .44        | [.32, .55]    |
| Substance use total risk           | 250      | .22**                 | .63        | [.56, .70]    | 147      | .27**                 | .67        | [.58, .76]    | 103      | .15                   | .57        | [.46, .69]    |
| Substance use static risk          | 250      | .14*                  | .58        | [.50, .65]    | 147      | .16                   | .59        | [.49, .69]    | 103      | .11                   | .56        | [.45, .68]    |
| Substance use dynamic risk         | 250      | .20**                 | .62        | [.55, .69]    | 147      | .26**                 | .66        | [.57, .76]    | 103      | .13                   | .57        | [.46, .68]    |
| Attitudes total risk               | 252      | .22**                 | .63        | [.56, .70]    | 148      | .24**                 | .65        | [.55, .74]    | 104      | .17                   | .60        | [.49, .71]    |
| Attitudes static risk              | 249      | .03                   | .52        | [.45, .60]    | 145      | .06                   | .54        | [.44, .64]    | 104      | -.06                  | .48        | [.37, .59]    |
| Attitudes dynamic risk             | 252      | .23**                 | .64        | [.57, .71]    | 148      | .24**                 | .65        | [.56, .74]    | 104      | .19                   | .61        | [.50, .72]    |
| Social/cognitive skills total risk | 251      | .12                   | .57        | [.50, .65]    | 148      | .20*                  | .63        | [.53, .72]    | 103      | .05                   | .53        | [.42, .65]    |

|   | Total    |                       |            |               | Males    |                       |            |               | Females  |                       |            |               |
|---|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|   | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> |
| Social/cognitive skills<br>dynamic risk | 251      | .12                   | .57        | [.50, .65]    | 148      | .20*                  | .63        | [.53, .72]    | 103      | .05                   | .53        | [.42, .65]    |
| Employ. & free time total<br>risk       | 251      | .07                   | .54        | [.46, .61]    | 148      | .13                   | .57        | [.48, .67]    | 103      | -.06                  | .47        | [.36, .58]    |
| Employ. & free time<br>static risk      | 250      | -.02                  | .50        | [.43, .57]    | 147      | .05                   | .53        | [.43, .63]    | 103      | -.18                  | .44        | [.33, .55]    |
| Employ. & free time<br>dynamic risk     | 251      | .09                   | .55        | [.48, .62]    | 148      | .13                   | .57        | [.48, .67]    | 103      | .00                   | .51        | [.40, .62]    |
| Violence & aggression total<br>risk     | 250      | .19**                 | .60        | [.53, .67]    | 147      | .21*                  | .62        | [.53, .72]    | 103      | .16                   | .58        | [.47, .70]    |
| Violence & aggression<br>static risk    | 250      | .19**                 | .61        | [.54, .68]    | 147      | .14                   | .59        | [.49, .69]    | 103      | .21*                  | .60        | [.49, .71]    |
| Violence & aggression<br>dynamic risk   | 250      | .14*                  | .59        | [.51, .66]    | 147      | .23**                 | .65        | [.55, .74]    | 103      | .07                   | .54        | [.43, .65]    |

*Note.* Original YASI (Orbis Partners, 2000). YASI-GI (Gender informed; Orbis Partners, 2011). Adjusted total risk score = Total risk score – Total protective score. *r<sub>pb</sub>* = Pearson point biserial correlation. *AUC* = area under receiver operator characteristic (ROC) curve. 95% CI = confidence interval [upper limit, lower limit] for *AUC*. \* *p* < .05, \*\**p* < .01.

The bivariate analysis of domains and subdomains and violent recidivism is presented in Table 27. There are some interesting findings pertaining to the prediction of violent recidivism among females. First, five of the eight domains on the YLS/CMI were significantly predictive for females and two emerged as female specific for violent recidivism – substance abuse and personality. Interestingly, the domains of substance abuse and personality were found to be significantly predictive for females for general recidivism as reported by Olver et al. (2014). The peers and leisure/recreation domain on the YLS/CMI emerged as gender neutral in the prediction of violent recidivism (i.e., equally predictive for both males and females), and criminal history was found to be male specific (i.e., not predictive for females) for violent recidivism. Also significant for females were the four factors of the PCL:YV – the interpersonal, affective, behavioural, and antisocial factors of the PCL:YV were significantly predictive for females for violent recidivism, however were not significant for the males. Factor four (antisocial) in particular was a large effect for the females ( $AUC = .73$ ).

For the original YASI full assessment the criminal history, social networks, substance use, and violence and aggression domains were predictive of violent recidivism for both males and females. Criminal history was moderately predictive for both males and females, as was substance use. For the social networks domain however, a large effect was found for the females in predicting violent recidivism ( $AUC = .76$ ) compared to a small effect found for males ( $AUC = .59$ ), suggesting social networks is a female salient factor for violent recidivism however emerged as a gender neutral predictor for general recidivism. The attitudes domain was also moderately predictive of violent recidivism ( $AUC = .65$ ) for the females and was not significant for the males, suggesting

attitudes is female specific as a predictor of violent recidivism. The domain that predicted for only the males was education and was a small effect ( $AUC < .63$ ). Similar to the bivariate results with general recidivism, the mental health, skills, and employment and free time risk domains were not significant for either males or females. A similar pattern of results emerged with the YASI-GI full assessment, though importantly and contrary to what was hypothesized the magnitude of the effects for females with the YASI-GI were slightly smaller. For violent recidivism, the family domain did not emerge as a significant predictor for either males or females and was in the opposite direction than expected.

Table 27

*Bivariate Predictive Validity of Domain Level Scores for Violent Recidivism Using 2-Year Fixed Follow Up by Gender*

|                        | Total    |                       |            |               | Males    |                       |            |               | Females  |                       |            |               |
|------------------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|                        | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> |
| <i>YLS/CMI domains</i> |          |                       |            |               |          |                       |            |               |          |                       |            |               |
| Criminal history       | 250      | .20**                 | .61        | [.54, .68]    | 148      | .17*                  | .59        | [.50, .68]    | 102      | .15                   | .59        | [.46, .72]    |
| Family history         | 250      | .05                   | .53        | [.45, .60]    | 148      | .09                   | .55        | [.45, .64]    | 102      | .14                   | .58        | [.46, .71]    |
| Education/employment   | 250      | .26**                 | .64        | [.57, .71]    | 148      | .26**                 | .64        | [.56, .73]    | 102      | .29**                 | .68        | [.56, .80]    |
| Peers                  | 250      | .23**                 | .63        | [.56, .70]    | 148      | .20*                  | .61        | [.52, .70]    | 102      | .26**                 | .66        | [.55, .77]    |
| Leisure/recreation     | 250      | .20**                 | .61        | [.54, .68]    | 148      | .16*                  | .58        | [.49, .67]    | 102      | .22*                  | .63        | [.51, .75]    |
| Substance use          | 249      | .18**                 | .60        | [.53, .67]    | 147      | .10                   | .55        | [.46, .65]    | 102      | .29**                 | .68        | [.57, .79]    |
| Personality            | 250      | .15*                  | .58        | [.51, .66]    | 148      | .11                   | .55        | [.46, .64]    | 102      | .28**                 | .68        | [.56, .80]    |
| Attitudes              | 249      | .23**                 | .63        | [.56, .70]    | 148      | .20*                  | .61        | [.52, .70]    | 101      | .21*                  | .64        | [.52, .75]    |
| <i>PCL:YV domains</i>  |          |                       |            |               |          |                       |            |               |          |                       |            |               |
| F1: Interpersonal      | 251      | .13*                  | .58        | [.51, .65]    | 148      | .07                   | .55        | [.45, .64]    | 103      | .21*                  | .63        | [.51, .75]    |
| F2: Affective          | 251      | .11                   | .56        | [.49, .63]    | 148      | .03                   | .51        | [.41, .60]    | 103      | .24*                  | .66        | [.55, .78]    |
| F3: Behavioural        | 251      | .12                   | .56        | [.49, .64]    | 148      | .03                   | .51        | [.42, .61]    | 103      | .24*                  | .65        | [.54, .76]    |
| F4: Antisocial         | 251      | .27**                 | .65        | [.59, .72]    | 148      | .14                   | .55        | [.46, .65]    | 103      | .37**                 | .73        | [.62, .86]    |

|  | Total    |                       |            |               | Males    |                       |            |               | Females  |                       |            |               |
|--|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|  | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> |
| <i>Original YASI pre-screen domains</i>      |          |                       |            |               |          |                       |            |               |          |                       |            |               |
| Criminal history                             | 254      | .28**                 | .66        | [.59, .73]    | 148      | .24**                 | .63        | [.54, .72]    | 106      | .28**                 | .66        | [.55, .78]    |
| Social history                               | 254      | .15*                  | .59        | [.52, .66]    | 148      | .20*                  | .61        | [.52, .70]    | 105      | .18                   | .62        | [.49, .75]    |
| <i>Original YASI full assessment domains</i> |          |                       |            |               |          |                       |            |               |          |                       |            |               |
| Criminal history total risk                  | 254      | .28**                 | .66        | [.59, .73]    | 148      | .24**                 | .63        | [.54, .72]    | 106      | .28**                 | .66        | [.55, .78]    |
| Family history total risk                    | 253      | -.01                  | .51        | [.43, .58]    | 148      | .15                   | .59        | [.50, .69]    | 105      | -.03                  | .48        | [.36, .60]    |
| Family history static risk                   | 253      | -.00                  | .50        | [.42, .57]    | 148      | .08                   | .54        | [.45, .64]    | 105      | .10                   | .55        | [.42, .68]    |
| Family history dynamic risk                  | 253      | .01                   | .51        | [.44, .59]    | 148      | .16                   | .60        | [.51, .69]    | 105      | -.07                  | .46        | [.34, .58]    |
| School total risk                            | 251      | .17**                 | .59        | [.52, .66]    | 148      | .22**                 | .61        | [.52, .70]    | 103      | .10                   | .57        | [.45, .68]    |
| School static risk                           | 251      | .15*                  | .58        | [.51, .65]    | 148      | .04                   | .51        | [.42, .61]    | 103      | .27**                 | .66        | [.55, .77]    |
| School dynamic risk                          | 251      | .13*                  | .57        | [.50, .64]    | 148      | .25**                 | .63        | [.54, .72]    | 103      | -.00                  | .50        | [.38, .62]    |
| Social networks total risk                   | 251      | .29**                 | .67        | [.61, .74]    | 148      | .19*                  | .59        | [.50, .69]    | 103      | .40**                 | .76        | [.66, .86]    |
| Social networks static risk                  | 244      | .13*                  | .54        | [.47, .62]    | 143      | .05                   | .50        | [.41, .60]    | 101      | .20                   | .60        | [.48, .71]    |
| Social networks dynamic risk                 | 251      | .30**                 | .68        | [.61, .74]    | 148      | .21**                 | .60        | [.51, .69]    | 103      | .39**                 | .76        | [.66, .87]    |
| Mental health total risk                     | 252      | -.11                  | .44        | [.36, .51]    | 148      | -.06                  | .47        | [.38, .57]    | 104      | .02                   | .51        | [.38, .64]    |
| Mental health static risk                    | 252      | -.12                  | .44        | [.37, .51]    | 148      | -.08                  | .47        | [.37, .56]    | 104      | .02                   | .52        | [.39, .65]    |

|                                      | Total    |                       |            |               | Males    |                       |            |               | Females  |                       |            |               |
|--------------------------------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|                                      | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> |
| Mental health dynamic risk           | 250      | -.04                  | .48        | [.41, .55]    | 148      | -.10                  | .47        | [.37, .56]    | 103      | .13                   | .57        | [.44, .69]    |
| Substance use total risk             | 250      | .23**                 | .64        | [.57, .71]    | 147      | .22**                 | .63        | [.54, .72]    | 103      | .23*                  | .65        | [.53, .76]    |
| Substance use static risk            | 250      | .13*                  | .57        | [.49, .64]    | 147      | -.06                  | .53        | [.44, .63]    | 103      | .24*                  | .64        | [.52, .75]    |
| Substance use dynamic risk           | 250      | .22**                 | .63        | [.56, .70]    | 147      | .23**                 | .64        | [.55, .73]    | 103      | .18                   | .61        | [.49, .73]    |
| Attitudes total risk                 | 252      | .16*                  | .59        | [.52, .66]    | 148      | .11                   | .56        | [.47, .66]    | 104      | .22*                  | .65        | [.53, .76]    |
| Attitudes static risk                | 249      | .01                   | .51        | [.44, .58]    | 145      | -.01                  | .50        | [.41, .60]    | 104      | -.03                  | .49        | [.36, .61]    |
| Attitudes dynamic risk               | 252      | .17**                 | .60        | [.53, .67]    | 148      | .12                   | .57        | [.48, .66]    | 104      | .02                   | .66        | [.55, .77]    |
| Social/cognitive skills total risk   | 251      | .10                   | .56        | [.49, .63]    | 148      | .09                   | .55        | [.46, .65]    | 103      | .15                   | .59        | [.47, .71]    |
| Social/cognitive skills dynamic risk | 251      | .10                   | .56        | [.49, .63]    | 148      | .09                   | .55        | [.46, .65]    | 103      | .15                   | .59        | [.47, .71]    |
| Employ. & free time total risk       | 251      | .11                   | .56        | [.48, .63]    | 148      | .16                   | .58        | [.49, .67]    | 103      | -.05                  | .48        | [.36, .61]    |
| Employ. & free time static risk      | 250      | .05                   | .54        | [.47, .61]    | 147      | .10                   | .57        | [.48, .66]    | 103      | -.12                  | .47        | [.35, .59]    |
| Employ. & free time dynamic risk     | 251      | .11                   | .56        | [.49, .63]    | 148      | .13                   | .57        | [.48, .66]    | 103      | .13                   | .51        | [.38, .64]    |
| Violence & aggression total risk     | 250      | .23**                 | .63        | [.56, .70]    | 147      | .18*                  | .60        | [.51, .69]    | 103      | .29**                 | .66        | [.54, .79]    |
| Violence & aggression static risk    | 250      | .23**                 | .64        | [.57, .71]    | 148      | .17*                  | .60        | [.51, .69]    | 103      | .32**                 | .69        | [.57, .81]    |

|  | Total    |                       |            |               | Males    |                       |            |               | Females  |                       |            |               |
|--|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|  | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> |
| Violence & aggression dynamic risk     | 250      | .15*                  | .58        | [.51, .65]    | 147      | .18*                  | .60        | [.51, .69]    | 103      | .15                   | .59        | [.46, .71]    |
| <i>YASI-GI pre-screen domains</i>      |          |                       |            |               |          |                       |            |               |          |                       |            |               |
| Criminal history                       | 254      | .28**                 | .66        | [.59, .73]    | 148      | .24**                 | .63        | [.54, .72]    | 106      | .28**                 | .66        | [.55, .78]    |
| Social history                         | 253      | .17**                 | .60        | [.53, .67]    | 148      | .18*                  | .61        | [.52, .70]    | 105      | .22*                  | .64        | [.51, .76]    |
| <i>YASI-GI full assessment domains</i> |          |                       |            |               |          |                       |            |               |          |                       |            |               |
| Criminal history total risk            | 254      | .28**                 | .66        | [.59, .73]    | 148      | .17*                  | .63        | [.54, .72]    | 106      | .28**                 | .66        | [.55, .78]    |
| Family history total risk              | 253      | -.01                  | .50        | [.43, .57]    | 148      | .12                   | .58        | [.49, .67]    | 105      | -.02                  | .49        | [.37, .62]    |
| Family history static risk             | 253      | -.00                  | .50        | [.42, .57]    | 148      | .08                   | .54        | [.45, .64]    | 105      | .10                   | .55        | [.42, .68]    |
| Family history dynamic risk            | 253      | .00                   | .50        | [.43, .58]    | 148      | .12                   | .57        | [.48, .66]    | 105      | -.03                  | .49        | [.36, .61]    |
| School total risk                      | 251      | .18**                 | .60        | [.53, .67]    | 148      | .24**                 | .63        | [.54, .72]    | 103      | .08                   | .56        | [.44, .68]    |
| School static risk                     | 251      | .15*                  | .58        | [.51, .65]    | 148      | .04                   | .51        | [.42, .61]    | 103      | .27**                 | .66        | [.55, .77]    |
| School dynamic risk                    | 251      | .15*                  | .58        | [.51, .65]    | 148      | .27**                 | .65        | [.56, .74]    | 103      | -.01                  | .50        | [.38, .62]    |
| Social networks total risk             | 252      | .25**                 | .65        | [.58, .72]    | 148      | .19*                  | .60        | [.51, .69]    | 104      | .35**                 | .73        | [.62, .83]    |
| Social network static risk             | 246      | .13*                  | .56        | [.49, .63]    | 145      | -.03                  | .47        | [.38, .57]    | 101      | .31**                 | .67        | [.55, .79]    |
| Social network dynamic risk            | 252      | .27**                 | .66        | [.59, .73]    | 148      | .22**                 | .62        | [.53, .71]    | 104      | .36**                 | .74        | [.63, .71]    |

|                                      | Total    |                       |            |               | Males    |                       |            |               | Females  |                       |            |               |
|--------------------------------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|                                      | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> |
| Mental health total risk             | 254      | -.11                  | .44        | [.37, .51]    | 148      | -.03                  | .50        | [.41, .59]    | 106      | -.02                  | .49        | [.36, .62]    |
| Mental health static risk            | 254      | -.12                  | .43        | [.36, .50]    | 148      | -.05                  | .48        | [.39, .58]    | 106      | -.01                  | .49        | [.37, .62]    |
| Mental health dynamic risk           | 252      | -.07                  | .46        | [.38, .53]    | 148      | .02                   | .50        | [.41, .60]    | 104      | -.05                  | .47        | [.34, .60]    |
| Substance use total risk             | 250      | .20**                 | .61        | [.54, .68]    | 147      | .16*                  | .60        | [.51, .69]    | 103      | .25*                  | .64        | [.53, .75]    |
| Substance use static risk            | 250      | .13*                  | .57        | [.49, .64]    | 147      | -.06                  | .53        | [.44, .63]    | 103      | .24*                  | .64        | [.52, .75]    |
| Substance use dynamic risk           | 250      | .18**                 | .60        | [.53, .67]    | 148      | .17*                  | .60        | [.51, .69]    | 103      | .20*                  | .62        | [.50, .73]    |
| Attitudes total risk                 | 252      | .15*                  | .60        | [.53, .67]    | 148      | .10                   | .56        | [.47, .65]    | 104      | .21*                  | .65        | [.54, .76]    |
| Attitudes static risk                | 249      | .01                   | .51        | [.44, .58]    | 145      | -.01                  | .50        | [.41, .60]    | 104      | -.03                  | .49        | [.36, .61]    |
| Attitudes dynamic risk               | 252      | .16*                  | .60        | [.53, .67]    | 148      | .11                   | .56        | [.47, .65]    | 104      | .23*                  | .67        | [.56, .78]    |
| Social/cognitive skills total risk   | 251      | .12                   | .57        | [.50, .64]    | 148      | .13                   | .59        | [.49, .68]    | 103      | .14                   | .58        | [.45, .70]    |
| Social/cognitive skills dynamic risk | 251      | .12                   | .57        | [.50, .64]    | 148      | .13                   | .59        | [.49, .68]    | 103      | .14                   | .58        | [.45, .70]    |
| Employ. & free time total risk       | 251      | .14*                  | .57        | [.50, .64]    | 148      | .18*                  | .59        | [.50, .69]    | 103      | .02                   | .51        | [.39, .64]    |
| Employ. & free time static risk      | 250      | .05                   | .54        | [.47, .61]    | 147      | .10                   | .57        | [.48, .66]    | 103      | -.12                  | .47        | [.35, .59]    |

|                                       | Total    |                       |            |               | Males    |                       |            |               | Females  |                       |            |               |
|---------------------------------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|                                       | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | 95% <i>CI</i> |
| Employ. & free time<br>dynamic risk   | 251      | .13*                  | .57        | [.50, .64]    | 148      | .16                   | .58        | [.49, .68]    | 103      | .07                   | .54        | [.41, .66]    |
| Violence & aggression total<br>risk   | 250      | .21**                 | .62        | [.55, .69]    | 147      | .20*                  | .61        | [.52, .70]    | 103      | .25*                  | .65        | [.52, .77]    |
| Violence & aggression<br>static risk  | 250      | .24**                 | .64        | [.57, .71]    | 148      | .16                   | .59        | [.50, .69]    | 103      | .32**                 | .68        | [.56, .81]    |
| Violence & aggression<br>dynamic risk | 250      | .15*                  | .59        | [.51, .66]    | 147      | .20*                  | .61        | [.52, .71]    | 103      | .14                   | .58        | [.45, .70]    |

*Note.* Original YASI (Orbis Partners, 2000). YASI-GI (Gender informed; Orbis Partners, 2011). Adjusted total risk score = Total risk score – Total protective score. *r<sub>pb</sub>* = Pearson point biserial correlation. *AUC* = area under receiver operator characteristic (*ROC*) curve. 95% *CI* = confidence interval [upper limit, lower limit) for *AUC*. \* *p* < .05, \*\**p* < .01.

**Convergent Validity of Original YASI and YASI-GI with Other Measures of Risk**

To evaluate the convergent validity of the original YASI and the YASI-GI for both pre-screen and full assessments, correlations were calculated with two well-known standardized instruments that assess risk in young offenders – the YLS/CMI and the PCL:YV. The convergent validity results at the global level (i.e., total scores) are presented in Table 28, followed by the convergent validity of the scales at the domain level for risk components (Table 29) and strength components (Table 30).

Overall, as hypothesized the results of the correlations suggest good convergent validity between the original YASI full assessment, the YASI-GI full assessment, and the YLS/CMI and PCL:YV. Many of the correlations between the domain scores on the YASI/YASI-GI full assessment and the domains of the YLS/CMI were large effects, with the largest effects for criminal history, substance use, and overall total YLS/CMI score. Of no surprise, the YASI and YASI-GI full assessment total risk scores and the PCL:YV total score were also highly correlated. At the domain level for risk components of the YASI and YASI-GI, the corresponding domains of the YLS/CMI demonstrated large correlations<sup>31</sup>. The largest correlations were observed for criminal history, family history, social networks/peers, substance abuse, substance use and attitudes for the domains on both the original YASI and the YASI-GI. The results for the domain level for the strength components of the YASI and YASI-GI were not as highly correlated with the YLS/CMI strengths, though significant correlations were still found. In particular, the correlation

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<sup>31</sup> Note the large correlations refers to the relationships between domains on the YASI/YASI-GI that correspond to the domains of the YLS/CMI and PCL:YV that are conceptually similar.

between the original YASI total protective score and the YLS/CMI total strength score was  $r = .54$  and the YASI-GI total protective score and the YLS/CMI total strength score was  $r = .53$ . There were also significant correlations between the individual domains with this highest found for the correlation between family history and the attitudes domains for both the YASI and the YASI-GI with the corresponding YLS/CMI domains.

Table 28

*Convergent Validity at the Global Level – Correlations Between the YASI, YASI-GI, YLS/CMI, and PCL:YV (Total Risk Scores)*

| YASI/YASI-GI total scores            | YLS/CMI total score <sup>a</sup> | PCL:YV <sup>b</sup> total score |
|--------------------------------------|----------------------------------|---------------------------------|
| <i>Original YASI pre-screen</i>      |                                  |                                 |
| YASI pre-screen total risk           | .74***                           | .72***                          |
| YASI pre-screen total protective     | -.49***                          | -.43***                         |
| <i>Original YASI full assessment</i> |                                  |                                 |
| YASI adjusted total risk score       | .77***                           | .73***                          |
| YASI total risk score                | .77***                           | .77***                          |
| YASI total protective score          | -.67***                          | -.57***                         |
| <i>YASI-GI pre-screen total risk</i> |                                  |                                 |
| YASI-GI pre-screen total risk        | .72***                           | .74***                          |
| YASI-GI pre-screen total protective  | -.53***                          | -.46***                         |
| <i>YASI-GI full assessment</i>       |                                  |                                 |
| YASI-GI adjusted total risk score    | .74***                           | .71***                          |
| YASI-GI total risk score             | .74***                           | .71***                          |
| YASI-GI total protective score       | -.65***                          | -.57***                         |

*Note.* YASI (Orbis Partners, 2000). YASI-GI (Gender informed; Orbis Partners, 2011). YASI/YASI-GI adjusted total score = YASI/YASI-GI total risk score – YASI/YASI-GI total protective score. <sup>a</sup> $N$  range = 248-250. <sup>b</sup>  $N$  range = 250-251. Values reported are Pearson correlations ( $r$ ). \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 29

*Convergent Validity at the Domain Level – Correlations Between the YASI, YASI-GI, YLS/CMI, and PCL:YV (Risk Scores)*

| YASI/YASI-GI<br>Domains               | YLS/CMI Domains |              |             |        |         |             |        |          | PCL:YV Factors |             |             |             |
|---------------------------------------|-----------------|--------------|-------------|--------|---------|-------------|--------|----------|----------------|-------------|-------------|-------------|
|                                       | Crim<br>Hx      | Family<br>Hx | Edu/<br>Emp | Peers  | Leisure | Subs<br>use | Pers.  | Attitude | Factor<br>1    | Factor<br>2 | Factor<br>3 | Factor<br>4 |
| <i>Original YASI pre-screen</i>       |                 |              |             |        |         |             |        |          |                |             |             |             |
| YASI pre-screen<br>criminal history   | .75***          | .20**        | .21**       | .39*** | .27***  | .37***      | .31*** | .38***   | .17*           | .28***      | .37***      | .66***      |
| YASI pre-screen social<br>history     | .22**           | .47***       | .47***      | .41*** | .29***  | .45***      | .53*** | .43***   | .40***         | .43***      | .50***      | .56***      |
| <i>Original YASI full assessment</i>  |                 |              |             |        |         |             |        |          |                |             |             |             |
| Criminal history total<br>risk        | .75***          | .20**        | .21**       | .39*** | .27***  | .37***      | .31*** | .38***   | .17*           | .28***      | .37***      | .66***      |
| Family history total risk             | .03             | .59***       | .23***      | .23*** | .18*    | .23***      | .25*** | .24***   | .25***         | .26***      | .24***      | .22***      |
| School total risk                     | .02             | .12          | .45***      | .27*** | .19**   | .18*        | .31    | .30***   | .30***         | .26***      | .29***      | .26***      |
| Social networks total<br>risk         | .41***          | .39***       | .47***      | .64*** | .38***  | .46***      | .42*** | .56***   | .39***         | .43***      | .56***      | .59***      |
| Employ. & free time<br>total risk     | .15*            | .11          | .02         | .17    | .42***  | .06         | .07    | .18**    | .10            | .18*        | .20**       | .18**       |
| Substance use total risk              | .39***          | .43***       | .28***      | .36*** | .34***  | .72***      | .29*** | .42***   | .19**          | .26***      | .37***      | .42***      |
| Social/cognitive skills<br>total risk | .05             | .22**        | .26***      | .21**  | .21**   | .11         | .41*** | .37***   | .23***         | .42***      | .30***      | .19**       |

| YASI/YASI-GI<br>Domains             | YLS/CMI Domains |              |             |        |         |             |        |          | PCL:YV Factors |             |             |             |
|-------------------------------------|-----------------|--------------|-------------|--------|---------|-------------|--------|----------|----------------|-------------|-------------|-------------|
|                                     | Crim<br>Hx      | Family<br>Hx | Edu/<br>Emp | Peers  | Leisure | Subs<br>use | Pers.  | Attitude | Factor<br>1    | Factor<br>2 | Factor<br>3 | Factor<br>4 |
| Attitudes total risk                | .09             | .19**        | .22**       | .34*** | .24***  | .20***      | .45*** | .65***   | .39***         | .68***      | .26***      | .29***      |
| Violence & aggression<br>total risk | .29***          | .23***       | .28***      | .32*** | .17*    | .20**       | .62*** | .43***   | .34***         | .44***      | .36***      | .62***      |
| <i>YASI-GI pre-screen</i>           |                 |              |             |        |         |             |        |          |                |             |             |             |
| Pre-screen criminal<br>history      | .75***          | .20**        | .21**       | .39*** | .27***  | .37***      | .31*** | .38***   | .17***         | .28***      | .37***      | .66***      |
| Pre-screen social history           | .25***          | .45***       | .44***      | .41*** | .28***  | .41***      | .57*** | .46***   | .41***         | .48***      | .50***      | .61***      |
| <i>YASI-GI full assessment</i>      |                 |              |             |        |         |             |        |          |                |             |             |             |
| Criminal history total<br>risk      | .75***          | .20**        | .21**       | .39*** | .27***  | .37***      | .31*** | .38***   | .17*           | .28***      | .37***      | .66***      |
| Family history total risk           | .03             | .60***       | .23***      | .25*** | .21***  | .24***      | .27*** | .29***   | .27***         | .30***      | .27***      | .22***      |
| School total risk                   | .04             | .15*         | .49***      | .28*** | .25***  | .18**       | .32*** | .35***   | .33***         | .30***      | .32***      | .27***      |
| Social networks total<br>risk       | .33***          | .40***       | .45***      | .63*** | .36***  | .42***      | .40*** | .52***   | .39***         | .42***      | .55***      | .55***      |
| Employ. & free time<br>total risk   | .14*            | .15*         | .05         | .22*** | .56***  | .10         | .12    | .29***   | .10            | .26***      | .22**       | .19**       |
| Substance use total risk            | .37***          | .43***       | .29***      | .34*** | .31***  | .71***      | .28*** | .37***   | .20**          | .26***      | .39***      | .44***      |

| YASI/YASI-GI<br>Domains               | YLS/CMI Domains |              |             |        |         |             |        |          | PCL:YV Factors |             |             |             |
|---------------------------------------|-----------------|--------------|-------------|--------|---------|-------------|--------|----------|----------------|-------------|-------------|-------------|
|                                       | Crim<br>Hx      | Family<br>Hx | Edu/<br>Emp | Peers  | Leisure | Subs<br>use | Pers.  | Attitude | Factor<br>1    | Factor<br>2 | Factor<br>3 | Factor<br>4 |
| Social/cognitive skills<br>total risk | .10             | .27***       | .29***      | .26*** | .23***  | .16*        | .46*** | .39***   | .30***         | .45***      | .36***      | .27***      |
| Attitudes total risk                  | .10             | .18*         | .21**       | .35*** | .25***  | .21***      | .46*** | .66***   | .34***         | .43***      | .33***      | .56***      |
| Violence & aggression<br>total risk   | .26***          | .25***       | .29***      | .32*** | .16*    | .19**       | .68*** | .42***   | .30***         | .45***      | .36***      | .27***      |

*Note.* YASI (Orbis Partners, 2000). YASI-GI (Gender informed; Orbis Partners, 2011). YASI/YASI-GI adjusted total score = YASI/YASI-GI total risk score – YASI/YASI-GI total protective score. Values reported are Pearson correlations ( $r$ ).

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$

Table 30

*Convergent Validity of Strengths at the Domain Level – Correlations Between the YASI, YASI-GI, and YLS/CMI Strengths*

| YASI/YASI-GI Domains                     | YLS/CMI Strength Domains |                  |                |                  |                    |                      |                    |                        |
|--|--------------------------|------------------|----------------|------------------|--------------------|----------------------|--------------------|------------------------|
|  | Family hx strength       | Edu/Emp strength | Peers strength | Leisure strength | Subs. use strength | Personality strength | Attitudes strength | YLS/CMI total strength |
| <i>YASI pre-screen</i>                   |                          |                  |                |                  |                    |                      |                    |                        |
| YASI pre-screen total protective         | .31***                   | .30***           | .22***         | .10              | .18**              | .22***               | .31***             | .43***                 |
| <i>YASI full assessment</i>              |                          |                  |                |                  |                    |                      |                    |                        |
| YASI total protective score              | .35***                   | .30***           | .25***         | .20**            | .28***             | .25***               | .45***             | .54***                 |
| Family history total protective          | .49***                   | .13*             | .09            | .17*             | .18*               | .10                  | .24***             | .38***                 |
| School total protective                  | .19**                    | .27***           | .17*           | .13              | .13*               | .14*                 | .20**              | .33***                 |
| Social networks total protective         | .25***                   | .24***           | .39***         | .17*             | .28***             | .15*                 | .39***             | .48***                 |
| Employ. & free time total protective     | .10                      | .21**            | .11            | .21**            | .11                | .07                  | .14*               | .26***                 |
| Social/cognitive skills total protective | .22***                   | .18*             | .16*           | .10              | .14*               | .25***               | .35***             | .36***                 |
| Attitudes total protective               | .15*                     | .22***           | .14*           | .07              | .30***             | .26***               | .49***             | .40***                 |
| Violence & aggression total protective   | .12                      | .13              | .13*           | .13*             | .22***             | .31***               | .38***             | .34***                 |

| YASI/YASI-GI Domains                     | YLS/CMI Strength Domains |                  |                |                  |                    |                      |                    | YLS/CMI total strength |
|--|--------------------------|------------------|----------------|------------------|--------------------|----------------------|--------------------|------------------------|
|  | Family hx strength       | Edu/Emp strength | Peers strength | Leisure strength | Subs. use strength | Personality strength | Attitudes strength |                        |
| <i>YASI-GI pre-screen</i>                |                          |                  |                |                  |                    |                      |                    |                        |
| Pre-screen total protective              | .34***                   | .28***           | .24***         | .12              | .18**              | .20**                | .27***             | .43***                 |
| <i>YASI-GI full assessment</i>           |                          |                  |                |                  |                    |                      |                    |                        |
| YASI-GI total protective score           | .34***                   | .29***           | .23***         | .21**            | .26***             | .25***               | .44***             | .53***                 |
| Family history total protective          | .48***                   | .16*             | .09            | .15*             | .18*               | .12                  | .28***             | .40***                 |
| School total protective                  | .21**                    | .29***           | .16*           | .14*             | .12                | .13**                | .19**              | .33***                 |
| Social networks total protective         | .24***                   | .23***           | .31***         | .15*             | .26***             | .12                  | .33***             | .43***                 |
| Employ. & free time total protective     | .09                      | .20**            | .12            | .24***           | .08                | .07                  | .14*               | .26***                 |
| Mental health total protective           | -.06                     | .09              | .07            | .14*             | .16*               | .10                  | .25***             | .18*                   |
| Substance use total protective           | -.02                     | -.06             | .10            | .06              | -.04               | -.03                 | -.08               | -.02                   |
| Social/cognitive skills total protective | .27***                   | .18*             | .15*           | .14*             | .18*               | .26***               | .38***             | .39***                 |
| Attitudes total protective               | .15*                     | .22***           | .14*           | .07              | .30***             | .26***               | .49***             | .40***                 |
| Violence & aggression total protective   | .18**                    | .15*             | .13            | .14*             | .19**              | .36***               | .43***             | .38***                 |

Note. YASI (Orbis Partners, 2000). YASI-GI (Gender informed; Orbis Partners, 2011). YASI/YASI-GI adjusted total score = YASI/YASI-GI total risk score – YASI/YASI-GI total protective score. Values reported are Pearson correlations ( $r$ ).

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$

### **Predictive Validity of Strengths in the Prediction of Outcome (Recidivism or No Recidivism)**

A significant contribution provided by the original YASI risk assessment is the consideration of strength factors in addition to risk. This last section of results focusses on the importance of strengths in the prediction of outcome (i.e., recidivism or no recidivism). Tables 31 to 34 provide the logistic regression results to examine the contribution of both total risk and total strength score in the prediction of both general and violent recidivism separated by gender. The bivariate prediction of the strength domains of the YASI and YASI-GI follows in Tables 35 and 36 for two outcomes – no general recidivism and no violent recidivism. To conclude, a series of hierarchical logistic regressions are presented in Table 37 through 42 to evaluate the incremental contribution of strengths in the prediction of recidivism outcome.

**The contribution of strengths in the prediction of recidivism at the global level.** As presented in Tables 31 and 32, a series of logistic regressions were conducted to determine the contribution that the YASI and YASI-GI strength scores (i.e., total protective scores) were adding to the prediction of recidivism above and beyond risk, separated by gender. The YLS/CMI total risk and total strength scores were also added as a comparative model. For the YASI models – the YASI pre-screen and full assessment as well as the YASI-GI pre-screen – the total protective score was not contributing significantly to the model for the prediction of general recidivism. The one exception was the YASI-GI full assessment for the males – according to the logistic regression results, the total protective score is significantly contributing to the prediction of general recidivism. These findings however must be interpreted with caution given the

number of logistic regression tests run and the significance of this test is  $p < .05$ . If the number of tests were taken into consideration and alpha was to be adjusted to avoid capitalizing on chance in finding a significant effect ( $.05/10 = .005$ ), the finding for the protective effect for the YASI-GI full assessment would no longer be significant.

Tables 33 and 34 present the results of the logistic regressions conducted to determine the contribution of strengths in the prediction of violent recidivism. As can be seen for the males in Table 33, the total protective score for both the original YASI and YASI-GI was found to be a significant contributor to the prediction of violent recidivism. However, once again, if the alpha were to be adjusted to accommodate the number of logistic regressions conducted for violent recidivism ( $.05/10=.005$ ), these results would no longer be significant.

Together the results of the logistic regression analysis do not conclusively demonstrate that the strength total score of the YASI and YASI-GI are significantly contributing to the overall prediction of general or violent recidivism as hypothesized – it was expected that the total strength score (pre-screen total protective score and full assessment total protective score) would provide a significant contribution to the prediction of outcome when added into the model with total risk score at the global level. One of the models (YASI-GI full assessment for males, both general and violent recidivism) did find a significant effect for the total protective score ( $p < .05$ ). Further research that examines strengths factors in the assessment of risk and how best to combine risk and strengths into an overall assessment model is needed.

Table 31

*The Contribution of Strengths in the Prediction of General Recidivism - Males*

|                                      | <i>B (SE)</i> | Wald $\chi^2$ | <i>OR [95% CI]</i> | Model Fit                      |
|--------------------------------------|---------------|---------------|--------------------|--------------------------------|
| <i>Original YASI pre-screen</i>      |               |               |                    | $\chi^2 (2) = 15.98, p < .001$ |
| Pre-screen total risk                | .08 (.02)     | 9.69**        | 1.08 [1.03, 1.13]  |                                |
| Pre-screen total protective          | .00 (.08)     | .00           | 1.00 [ .86, 1.17]  |                                |
| <i>Original YASI full assessment</i> |               |               |                    | $\chi^2 (2) = 21.41, p < .001$ |
| YASI total risk                      | .01 (.02)     | .65           | 1.01 [ .98, 1.05]  |                                |
| YASI total protective                | -.05 (.03)    | 4.29          | .95 [ .90, 1.00]   |                                |
| <i>YASI-GI pre-screen</i>            |               |               |                    | $\chi^2 (2) = 12.73, p < .01$  |
| YASI-GI pre-screen total risk        | .04 (.02)     | 5.24*         | 1.04 [1.01, 1.08]  |                                |
| YASI-GI pre-screen total protective  | -.06 (.07)    | .60           | .95 [ .82, 1.09]   |                                |
| <i>YASI-GI full assessment</i>       |               |               |                    | $\chi^2 (2) = 22.18, p < .001$ |
| YASI-GI total risk                   | .00 (.01)     | .04           | 1.01 [ .98, 1.03]  |                                |
| YASI-GI total protective             | -.05 (.02)    | 6.39*         | .95 [ .91, .99]    |                                |
| <i>YLS/CMI</i>                       |               |               |                    | $\chi^2 (2) = 15.07, p < .01$  |
| YLS/CMI total risk                   | .09 (.03)     | 9.00***       | 1.10 [1.03, 1.17]  |                                |
| YLS/CMI total strength               | -.03 (.15)    | .05           | .97 [ .73, 1.29]   |                                |

Note. YASI (Orbis Partners, 2000). YASI-GI (Gender informed; Orbis Partners, 2011). \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$

Table 32

*The Contribution of Strengths in the Prediction of General Recidivism - Females*

|                                      | <i>B (SE)</i> | Wald $\chi^2$ | <i>OR [95% CI]</i> | Model Fit                     |
|--------------------------------------|---------------|---------------|--------------------|-------------------------------|
| <i>Original YASI pre-screen</i>      |               |               |                    | $\chi^2 (2) = 5.42, ns$       |
| Pre-screen total risk                | .05 (.03)     | 4.42***       | 1.06 [1.00, 1.12]  |                               |
| Pre-screen total protective          | .00 (.09)     | .00           | 1.00 [ .84, 1.19]  |                               |
| <i>Original YASI full assessment</i> |               |               |                    | $\chi^2 (2) = 6.59, p < .05$  |
| YASI total risk                      | .02 (.02)     | 1.74          | 1.02 [ .99, 1.06]  |                               |
| YASI total protective                | -.02 (.02)    | .73           | .98 [ .93, 1.02]   |                               |
| <i>YASI-GI pre-screen</i>            |               |               |                    | $\chi^2 (2) = 3.58, ns$       |
| YASI-GI pre-screen total risk        | .03 (.02)     | 2.58          | 1.03 [ .99, 1.07]  |                               |
| YASI-GI pre-screen total protective  | -.02 (.08)    | .14           | .97 [ .84, 1.13]   |                               |
| <i>YASI-GI full assessment</i>       |               |               |                    | $\chi^2 (2) = 4.80, ns$       |
| YASI-GI total risk                   | .01 (.01)     | .84           | 1.01 [ .99, 1.04]  |                               |
| YASI-GI total protective             | -.02 (.02)    | .88           | .98 [ .95, 1.02]   |                               |
| <i>YLS/CMI</i>                       |               |               |                    | $\chi^2 (2) = 11.00, p < .01$ |
| YLS/CMI total risk                   | .09 (.04)     | 6.85*         | 1.10 [1.03, 1.18]  |                               |
| YLS/CMI total strength               | -.16 (.18)    | .81           | .85 [ .60, 1.20]   |                               |

Note. YASI (Orbis Partners, 2000). YASI-GI (Gender informed; Orbis Partners, 2011). \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$

Table 33

*The Contribution of Strengths in the Prediction of Violent Recidivism - Males*

|                                      | <i>B (SE)</i> | Wald $\chi^2$ | <i>OR [95% CI]</i> | Model Fit                      |
|--------------------------------------|---------------|---------------|--------------------|--------------------------------|
| <i>Original YASI pre-screen</i>      |               |               |                    | $\chi^2 (2) = 11.43, p < .01$  |
| Pre-screen total risk                | .04 (.02)     | 3.05          | 1.04 [1.00, 1.09]  |                                |
| Pre-screen total protective          | -.10 (.08)    | 1.77          | .91 [ .78, 1.05]   |                                |
| <i>Original YASI full assessment</i> |               |               |                    | $\chi^2 (2) = 15.90, p < .001$ |
| YASI total risk                      | .00 (.02)     | .00           | 1.00 [ .97, 1.03]  |                                |
| YASI total protective                | -.06 (.03)    | 5.50*         | .94 [ .90, .99]    |                                |
| <i>YASI-GI pre-screen</i>            |               |               |                    | $\chi^2 (2) = 10.66, p < .05$  |
| YASI-GI pre-screen total risk        | .02 (.02)     | 1.55          | 1.02 [ .99, 1.06]  |                                |
| YASI-GI pre-screen total protective  | -.12 (.07)    | 2.82          | .89 [ .78, 1.02]   |                                |
| <i>YASI-GI full assessment</i>       |               |               |                    | $\chi^2 (2) = 17.07, p < .001$ |
| YASI-GI total risk                   | -.01 (.01)    | .26           | .99 [ .97, 1.02]   |                                |
| YASI-GI total protective             | -.06 (.02)    | 7.57*         | .95 [ .91, .98]    |                                |
| <i>YLS/CMI</i>                       |               |               |                    | $\chi^2 (2) = 8.71, p < .05$   |
| YLS/CMI total risk                   | .06 (.03)     | 3.61          | 1.06 [1.00, 1.12]  |                                |
| YLS/CMI total strength               | -.13 (.14)    | .80           | .88 [ .67, 1.16]   |                                |

Note. YASI (Orbis Partners, 2000). YASI-GI (Gender informed; Orbis Partners, 2011). \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$

Table 34

*The Contribution of Strengths in the Prediction of Violent Recidivism - Females*

|                                      | <i>B (SE)</i> | Wald $\chi^2$ | <i>OR [95% CI]</i> | Model Fit                      |
|--------------------------------------|---------------|---------------|--------------------|--------------------------------|
| <i>Original YASI pre-screen</i>      |               |               |                    | $\chi^2 (2) = 11.99, p < .001$ |
| Pre-screen total risk                | .11 (.03)     | 10.16**       | 1.11 [1.04, 1.19]  |                                |
| Pre-screen total protective          | .10 (.10)     | .96           | 1.11 [ .90, 1.36]  |                                |
| <i>Original YASI full assessment</i> |               |               |                    | $\chi^2 (2) = 14.37, p < .01$  |
| YASI total risk                      | .06 (.02)     | 7.19*         | 1.06 [1.02, 1.11]  |                                |
| YASI total protective                | .01 (.03)     | .04           | 1.00 [ .95, 1.07]  |                                |
| <i>YASI-GI pre-screen</i>            |               |               |                    | $\chi^2 (2) = 8.75, p < .05$   |
| YASI-GI pre-screen total risk        | .06 (.02)     | 7.02*         | 1.06 [1.02, 1.11]  |                                |
| YASI-GI pre-screen total protective  | .01 (.09)     | .01           | 1.01 [ .85, 1.20]  |                                |
| <i>YASI-GI full assessment</i>       |               |               |                    | $\chi^2 (2) = 10.77, p < .05$  |
| YASI-GI total risk                   | .04 (.02)     | 5.90*         | 1.04 [1.01, 1.08]  |                                |
| YASI-GI total protective             | .01 (.02)     | .09           | 1.01 [ .96, 1.06]  |                                |
| <i>YLS/CMI</i>                       |               |               |                    | $\chi^2 (2) = 14.81, p < .01$  |
| YLS/CMI total risk                   | .14 (.04)     | 10.57**       | 1.15 [1.06, 1.25]  |                                |
| YLS/CMI total strength               | -.12 (.21)    | .32           | .89 [ .58, 1.35]   |                                |

Note. YASI (Orbis Partners, 2000). YASI-GI (Gender informed; Orbis Partners, 2011). \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$

**Bivariate prediction of success with YASI and YASI-GI total domain**

**strength scores.** From Table 35 it can be seen for the males all of the strength domains, with the exception of education were significant and moderately predictive of success (i.e., no recidivism) ( $AUC > .63$ ). For the females, only three of the strengths domains were predictive – peers (small effect), attitudes (moderate effect), and employment (small effect). Interestingly and contrary to what would be expected based on gender responsive theory, the family domain did not emerge as a significant predictor of success among the females.

From Table 36, there were no large effects ( $AUC > .71$ ) for any of the strength domains from the YASI or the YASI-GI and violent recidivism. The strength domains that were moderately predictive for both males and females (gender neutral) were attitudes, employment, and violence and aggression. Factors that emerged as significant for the males only (i.e., male specific) included school, social cognitive skills, and social networks. There were no factors that emerged as specific to females for the strengths domains for success (no violent recidivism).

Table 35

*Bivariate Prediction of Success (i.e., no recidivism) Among Justice-Involved Youth*

|                                      | Total    |                       |            |              | Males    |                       |            |               | Females  |                       |            |               |
|--------------------------------------|----------|-----------------------|------------|--------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|                                      | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95%CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95% CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95% CI</i> |
| <i>Original YASI pre-screen</i>      |          |                       |            |              |          |                       |            |               |          |                       |            |               |
| Pre-screen total protective          | 252      | -.11                  | .45        | [.38, .53]   | 148      | -.19*                 | .39        | [.30, .49]    | 104      | -.08                  | .48        | [.37, .59]    |
| <i>Original YASI full assessment</i> |          |                       |            |              |          |                       |            |               |          |                       |            |               |
| Family history total strength        | 252      | -.08                  | .54        | [.46, .61]   | 148      | -.28**                | .67        | [.58, .76]    | 104      | .09                   | .42        | [.31, .53]    |
| Family history dynamic protective    | 252      | -.09                  | .53        | [.46, .61]   | 148      | -.29**                | .67        | [.57, .76]    | 104      | .07                   | .43        | [.32, .54]    |
| School total strength                | 251      | -.09                  | .55        | [.48, .62]   | 148      | -.14                  | .58        | [.48, .68]    | 103      | -.10                  | .56        | [.45, .67]    |
| School dynamic protective            | 251      | -.09                  | .55        | [.48, .62]   | 148      | -.14                  | .58        | [.48, .68]    | 103      | -.10                  | .56        | [.45, .67]    |
| Social networks total strength       | 251      | -.28**                | .65        | [.58, .72]   | 148      | -.31**                | .69        | [.60, .78]    | 103      | -.24*                 | .62        | [.52, .73]    |
| Social networks dynamic protective   | 251      | -.28**                | .65        | [.58, .72]   | 148      | -.31**                | .69        | [.60, .78]    | 103      | -.24*                 | .62        | [.52, .73]    |
| Attitudes total strength             | 252      | -.31**                | .65        | [.58, .72]   | 148      | -.31**                | .65        | [.56, .75]    | 104      | -.29**                | .65        | [.54, .75]    |
| Attitudes static protective          | 249      | -.09                  | .53        | [.46, .61]   | 145      | -.10                  | .54        | [.44, .64]    | 104      | -.03                  | .51        | [.40, .62]    |

|  | Total    |                       |            |              | Males    |                       |            |               | Females  |                       |            |               |
|--|----------|-----------------------|------------|--------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|  | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95%CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95% CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95% CI</i> |
| Attitudes dynamic protective               | 252      | -.33**                | .67        | [.60, .74]   | 148      | -.33**                | .67        | [.58, .76]    | 104      | -.33**                | .68        | [.58, .78]    |
| Social/cognitive skills total strength     | 251      | -.23**                | .61        | [.54, .68]   | 148      | -.28**                | .64        | [.54, .73]    | 103      | -.18                  | .59        | [.48, .70]    |
| Social/cognitive skills dynamic protective | 251      | -.23**                | .61        | [.54, .68]   | 148      | -.28**                | .64        | [.54, .73]    | 103      | -.18                  | .59        | [.48, .70]    |
| Employment & free time total strength      | 251      | -.22**                | .62        | [.55, .69]   | 148      | -.22**                | .63        | [.53, .73]    | 103      | -.22*                 | .62        | [.51, .73]    |
| Employment & free time static protective   | 250      | -.20**                | .62        | [.54, .69]   | 148      | -.21**                | .63        | [.53, .73]    | 103      | -.22*                 | .62        | [.51, .73]    |
| Employment & free time dynamic protective  | 251      | -.20**                | .61        | [.54, .68]   | 148      | -.21*                 | .62        | [.52, .72]    | 103      | -.18                  | .60        | [.49, .71]    |
| Violence & aggression total strength       | 250      | -.21**                | .61        | [.53, .68]   | 147      | -.31**                | .66        | [.57, .75]    | 103      | -.14                  | .58        | [.47, .69]    |
| Violence & aggression dynamic protective   | 250      | -.21**                | .61        | [.53, .68]   | 148      | -.31**                | .66        | [.57, .75]    | 103      | -.14                  | .58        | [.47, .69]    |
| <i>YASI-GI pre-screen</i>                  |          |                       |            |              |          |                       |            |               |          |                       |            |               |
| Pre-screen total protective                | 253      | -.13*                 | .56        | [.49, .64]   | 148      | -.22**                | .62        | [.52, .72]    | 105      | -.09                  | .54        | [.43, .65]    |
| <i>YASI-GI full assessment</i>             |          |                       |            |              |          |                       |            |               |          |                       |            |               |
| Family history total strength              | 252      | -.09                  | .54        | [.46, .61]   | 148      | -.28**                | .67        | [.57, .76]    | 104      | .06                   | .43        | [.32, .54]    |

|                                    | Total    |                       |            |              | Males    |                       |            |               | Females  |                       |            |               |
|------------------------------------|----------|-----------------------|------------|--------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|                                    | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95%CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95% CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95% CI</i> |
| Family history dynamic protective  | 253      | -.11                  | .54        | [.46, .61]   | 148      | -.29**                | .66        | [.57, .76]    | 105      | .03                   | .45        | [.34, .56]    |
| School total strength              | 251      | -.10                  | .56        | [.49, .63]   | 148      | -.16                  | .59        | [.49, .69]    | 103      | -.11                  | .56        | [.46, .68]    |
| School dynamic protective          | 251      | -.10                  | .56        | [.49, .63]   | 148      | -.16                  | .59        | [.49, .69]    | 103      | -.11                  | .57        | [.46, .68]    |
| Social networks total strength     | 252      | -.27**                | .66        | [.59, .72]   | 148      | -.33**                | .69        | [.61, .79]    | 104      | -.22*                 | .62        | [.52, .73]    |
| Social networks dynamic protective | 252      | -.27**                | .66        | [.59, .72]   | 148      | -.33**                | .70        | [.61, .79]    | 104      | -.23*                 | .62        | [.52, .73]    |
| Mental health total strength       | 250      | -.12                  | .55        | [.47, .62]   | 147      | -.14                  | .56        | [.46, .66]    | 103      | -.07                  | .52        | [.40, .63]    |
| Mental health dynamic protective   | 250      | -.12                  | .55        | [.47, .62]   | 147      | -.14                  | .56        | [.46, .66]    | 103      | -.07                  | .52        | [.40, .63]    |
| Substance use total strength       | 250      | -.14*                 | .57        | [.50, .64]   | 147      | -.11                  | .56        | [.46, .65]    | 103      | -.06                  | .53        | [.42, .64]    |
| Substance use dynamic protective   | 250      | -.14*                 | .57        | [.49, .64]   | 147      | -.09                  | .55        | [.45, .65]    | 103      | -.09                  | .54        | [.43, .65]    |
| Attitudes total strength           | 252      | -.31**                | .65        | [.58, .72]   | 148      | -.31**                | .65        | [.56, .75]    | 104      | -.29**                | .65        | [.54, .75]    |
| Attitudes static protective        | 249      | -.09                  | .53        | [.46, .61]   | 145      | -.10                  | .54        | [.44, .64]    | 104      | -.03                  | .51        | [.40, .62]    |

|  | Total    |                       |            |              | Males    |                       |            |               | Females  |                       |            |               |
|--|----------|-----------------------|------------|--------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|  | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95%CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95% CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95% CI</i> |
| Attitudes dynamic protective               | 252      | -.33**                | .67        | [.60, .74]   | 148      | -.33**                | .67        | [.58, .76]    | 104      | -.33**                | .68        | [.58, .78]    |
| Social/cognitive skills total strength     | 251      | -.24**                | .62        | [.55, .69]   | 148      | -.33**                | .67        | [.58, .77]    | 103      | -.14                  | .57        | [.46, .68]    |
| Social/cognitive skills dynamic protective | 251      | -.24**                | .62        | [.55, .69]   | 148      | -.33**                | .67        | [.58, .77]    | 103      | -.14                  | .57        | [.46, .68]    |
| Employment & free time total strength      | 251      | -.20**                | .62        | [.55, .69]   | 148      | -.20*                 | .62        | [.53, .72]    | 103      | -.22*                 | .62        | [.52, .73]    |
| Employment & free time static protective   | 250      | -.20**                | .62        | [.54, .69]   | 148      | -.21**                | .63        | [.53, .73]    | 103      | -.22*                 | .62        | [.51, .73]    |
| Employment & free time dynamic protective  | 251      | -.17**                | .60        | [.53, .68]   | 148      | -.17*                 | .61        | [.51, .71]    | 103      | -.18                  | .61        | [.50, .71]    |
| Violence & aggression total strength       | 250      | -.17**                | .59        | [.52, .66]   | 147      | -.29**                | .66        | [.56, .75]    | 103      | -.06                  | .54        | [.43, .65]    |
| Violence & aggression dynamic protective   | 250      | -.17**                | .59        | [.52, .66]   | 147      | -.29**                | .66        | [.56, .75]    | 103      | -.06                  | .54        | [.43, .65]    |
| <i>YLS/CMI Strengths</i>                   |          |                       |            |              |          |                       |            |               |          |                       |            |               |
| Total strength                             | 250      | -.17**                | .59        | [.52, .66]   | 148      | -.19*                 | .60        | [.50, .70]    | 102      | -.18                  | .59        | [.48, .70]    |
| Family strengths                           | 250      | .01                   | .50        | [.42, .57]   | 148      | -.05                  | .53        | [.43, .63]    | 102      | .03                   | .49        | [.38, .60]    |
| Education strengths                        | 249      | -.04                  | .52        | [.45, .59]   | 148      | -.08                  | .54        | [.44, .64]    | 101      | -.01                  | .50        | [.39, .62]    |
| Peer strengths                             | 249      | -.06                  | .52        | [.45, .59]   | 148      | -.07                  | .52        | [.42, .62]    | 101      | -.05                  | .52        | [.40, .63]    |
| Substance use strengths                    | 249      | -.14*                 | .55        | [.47, .62]   | 148      | -.16                  | .55        | [.45, .65]    | 102      | -.11                  | .54        | [.43, .65]    |

|                       | Total    |                       |            |              | Males    |                       |            |               | Females  |                       |            |               |
|-----------------------|----------|-----------------------|------------|--------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|                       | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95%CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95% CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95% CI</i> |
| Leisure strengths     | 250      | -.12                  | .55        | [.48, .62]   | 148      | -.15                  | .57        | [.47, .67]    | 102      | -.09                  | .54        | [.43, .65]    |
| Personality strengths | 250      | -.11                  | .53        | [.45, .60]   | 148      | -.08                  | .52        | [.42, .62]    | 102      | -.14                  | .53        | [.42, .65]    |
| Attitudes strengths   | 249      | -.26**                | .59        | [.51, .66]   | 148      | -.20*                 | .57        | [.47, .67]    | 101      | -.35**                | .62        | [.51, .73]    |

*Note.* YASI (Orbis Partners, 2000). YASI-GI (Gender informed; Orbis Partners, 2011). \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$

Table 36

*Bivariate Prediction of Success (i.e., no violent recidivism) Among Justice-Involved Youth*

|                                      | Total    |                       |            |              | Males    |                       |            |               | Females  |                       |            |               |
|--------------------------------------|----------|-----------------------|------------|--------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|                                      | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95%CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95% CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95% CI</i> |
| <i>Original YASI pre-screen</i>      |          |                       |            |              |          |                       |            |               |          |                       |            |               |
| Pre-screen total protective          | 252      | -.12                  | .44        | [.37, .51]   | 148      | -.23**                | .63        | [.54, .72]    | 104      | -.04                  | .51        | [.39, .64]    |
| <i>Original YASI full assessment</i> |          |                       |            |              |          |                       |            |               |          |                       |            |               |
| Family history total strength        | 252      | -.08                  | .54        | [.47, .61]   | 148      | -.21*                 | .61        | [.52, .70]    | 104      | -.01                  | .49        | [.37, .62]    |
| Family history dynamic protective    | 252      | -.09                  | .54        | [.47, .61]   | 148      | -.22**                | .62        | [.53, .71]    | 104      | -.02                  | .50        | [.37, .62]    |
| School total risk strength           | 251      | -.11                  | .56        | [.49, .63]   | 148      | -.22**                | .63        | [.54, .72]    | 103      | -.01                  | .50        | [.38, .63]    |
| School dynamic protective            | 251      | -.11                  | .56        | [.49, .63]   | 148      | -.22**                | .63        | [.54, .72]    | 103      | -.01                  | .50        | [.38, .63]    |
| Social networks total strength       | 251      | -.22**                | .62        | [.55, .69]   | 148      | -.25**                | .63        | [.54, .72]    | 103      | -.18                  | .60        | [.49, .72]    |
| Social networks dynamic protective   | 251      | -.22**                | .62        | [.55, .69]   | 148      | -.25**                | .63        | [.54, .72]    | 103      | -.18                  | .60        | [.49, .72]    |
| Attitudes total strength             | 252      | -.23**                | .62        | [.55, .69]   | 148      | -.19*                 | .59        | [.50, .68]    | 104      | -.28**                | .67        | [.56, .78]    |
| Attitudes static protective          | 249      | -.10                  | .53        | [.46, .61]   | 145      | -.06                  | .52        | [.43, .61]    | 104      | -.11                  | .54        | [.42, .66]    |

|  | Total    |                       |            |              | Males    |                       |            |               | Females  |                       |            |               |
|--|----------|-----------------------|------------|--------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|  | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95%CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95% CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95% CI</i> |
| Attitudes dynamic protective               | 252      | -.24**                | .63        | [.56, .69]   | 148      | -.20*                 | .59        | [.50, .68]    | 104      | -.30**                | .69        | [.58, .79]    |
| Social/cognitive skills total strength     | 251      | -.21**                | .61        | [.54, .68]   | 148      | -.22**                | .61        | [.52, .70]    | 103      | -.20*                 | .62        | [.51, .74]    |
| Social/cognitive skills dynamic protective | 251      | -.21**                | .61        | [.54, .68]   | 148      | -.22**                | .61        | [.52, .70]    | 103      | -.20*                 | .62        | [.51, .74]    |
| Employment & free time total strength      | 251      | -.24**                | .63        | [.56, .70]   | 148      | -.23**                | .63        | [.54, .72]    | 103      | -.26**                | .66        | [.55, .77]    |
| Employment & free time static protective   | 250      | -.20**                | .61        | [.54, .68]   | 148      | -.19*                 | .61        | [.52, .70]    | 103      | -.25*                 | .65        | [.54, .76]    |
| Employment & free time dynamic protective  | 251      | -.23**                | .63        | [.56, .70]   | 148      | -.23**                | .62        | [.53, .71]    | 103      | -.23**                | .64        | [.52, .75]    |
| Violence & aggression total strength       | 250      | -.19**                | .60        | [.53, .67]   | 147      | -.23**                | .62        | [.53, .71]    | 103      | -.22*                 | .64        | [.52, .76]    |
| Violence & aggression dynamic protective   | 250      | -.19**                | .60        | [.53, .67]   | 147      | -.23**                | .62        | [.53, .71]    | 103      | -.22*                 | .64        | [.52, .76]    |
| <i>YASI-GI pre-screen</i>                  |          |                       |            |              |          |                       |            |               |          |                       |            |               |
| Pre-screen total protective                | 252      | -.15*                 | .58        | [.51, .65]   | 148      | -.25**                | .63        | [.55, .72]    | 105      | -.09                  | .55        | [.43, .68]    |
| <i>YASI-GI full assessment</i>             |          |                       |            |              |          |                       |            |               |          |                       |            |               |
| Family history total strength              | 252      | -.08                  | .53        | [.46, .60]   | 148      | -.20*                 | .60        | [.51, .69]    | 104      | -.02                  | .49        | [.36, .61]    |

|                                    | Total    |                       |            |              | Males    |                       |            |               | Females  |                       |            |               |
|------------------------------------|----------|-----------------------|------------|--------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|                                    | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95%CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95% CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95% CI</i> |
| Family history dynamic protective  | 253      | -.10                  | .54        | [.46, .61]   | 148      | -.20**                | .60        | [.51, .69]    | 105      | -.07                  | .53        | [.40, .65]    |
| School total risk strength         | 251      | -.12                  | .57        | [.50, .64]   | 148      | -.25**                | .64        | [.55, .73]    | 103      | -.00                  | .50        | [.38, .62]    |
| School dynamic protective          | 251      | -.12                  | .57        | [.50, .64]   | 148      | -.25**                | .64        | [.55, .73]    | 103      | -.00                  | .50        | [.38, .62]    |
| Social networks total strength     | 252      | -.21**                | .61        | [.55, .68]   | 148      | -.27**                | .64        | [.55, .73]    | 104      | -.14                  | .59        | [.47, .70]    |
| Social networks dynamic protective | 252      | -.21**                | .61        | [.55, .68]   | 148      | -.27**                | .64        | [.55, .73]    | 104      | -.14                  | .59        | [.47, .70]    |
| Mental health total strength       | 250      | -.08                  | .53        | [.46, .60]   | 147      | -.15                  | .57        | [.48, .66]    | 103      | .06                   | .45        | [.33, .57]    |
| Mental health dynamic protective   | 250      | -.08                  | .53        | [.46, .60]   | 147      | -.15                  | .57        | [.48, .66]    | 103      | .06                   | .45        | [.33, .57]    |
| Substance use total strength       | 250      | -.15*                 | .58        | [.50, .65]   | 147      | -.08                  | .54        | [.45, .63]    | 103      | -.11                  | .56        | [.43, .68]    |
| Substance use dynamic protective   | 250      | -.14*                 | .58        | [.50, .65]   | 147      | -.10                  | .55        | [.46, .65]    | 103      | -.10                  | .55        | [.43, .67]    |
| Attitudes total strength           | 252      | -.23**                | .62        | [.55, .69]   | 148      | -.19*                 | .59        | [.50, .68]    | 104      | -.28**                | .67        | [.56, .78]    |
| Attitudes static protective        | 249      | -.10                  | .53        | [.46, .61]   | 145      | -.06                  | .52        | [.43, .61]    | 104      | -.11                  | .54        | [.42, .66]    |

|  | Total    |                       |            |              | Males    |                       |            |               | Females  |                       |            |               |
|--|----------|-----------------------|------------|--------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|  | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95%CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95% CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95% CI</i> |
| Attitudes dynamic protective               | 252      | -.24**                | .63        | [.56, .69]   | 148      | -.20*                 | .59        | [.50, .68]    | 104      | -.30**                | .69        | [.58, .79]    |
| Social/cognitive skills total strength     | 251      | -.21**                | .61        | [.54, .68]   | 148      | -.26**                | .63        | [.54, .72]    | 103      | -.18                  | .60        | [.47, .72]    |
| Social/cognitive skills dynamic protective | 251      | -.21**                | .61        | [.54, .68]   | 148      | -.26**                | .63        | [.54, .72]    | 103      | -.18                  | .60        | [.47, .72]    |
| Employment & free time total strength      | 251      | -.22**                | .62        | [.55, .69]   | 148      | -.22**                | .62        | [.53, .71]    | 103      | -.24*                 | .65        | [.53, .76]    |
| Employment & free time static protective   | 250      | -.20**                | .61        | [.54, .68]   | 148      | -.19*                 | .61        | [.52, .70]    | 103      | -.25*                 | .65        | [.54, .76]    |
| Employment & free time dynamic protective  | 251      | -.20**                | .61        | [.54, .68]   | 148      | .21**                 | .61        | [.52, .70]    | 103      | -.20*                 | .62        | [.50, .74]    |
| Violence & aggression total strength       | 250      | -.17**                | .61        | [.54, .68]   | 147      | -.24**                | .63        | [.55, .72]    | 103      | -.16                  | .61        | [.49, .74]    |
| Violence & aggression dynamic protective   | 250      | -.17**                | .61        | [.54, .68]   | 147      | -.24**                | .63        | [.55, .72]    | 103      | -.16                  | .61        | [.49, .74]    |
| <i>YLS/CMI Strengths</i>                   |          |                       |            |              |          |                       |            |               |          |                       |            |               |
| Total YLS/CMI strength                     | 250      | -.16*                 | .41        | [.34, .48]   | 148      | -.18*                 | .40        | [.31, .49]    | 102      | -.15                  | .41        | [.29, .53]    |
| Family strengths                           | 250      | .03                   | .51        | [.44, .59]   | 148      | -.01                  | .49        | [.40, .59]    | 102      | .01                   | .51        | [.38, .63]    |
| Education strengths                        | 249      | -.09                  | .46        | [.39, .53]   | 148      | -.15                  | .43        | [.34, .53]    | 101      | .00                   | .50        | [.38, .63]    |
| Peer strengths                             | 249      | -.05                  | .48        | [.41, .56]   | 148      | -.10                  | .47        | [.37, .56]    | 101      | .03                   | .51        | [.38, .64]    |
| Substance use strengths                    | 249      | -.16*                 | .45        | [.38, .52]   | 147      | -.18*                 | .45        | [.35, .54]    | 102      | -.10                  | .46        | [.34, .58]    |

|                       | Total    |                       |            |              | Males    |                       |            |               | Females  |                       |            |               |
|-----------------------|----------|-----------------------|------------|--------------|----------|-----------------------|------------|---------------|----------|-----------------------|------------|---------------|
|                       | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95%CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95% CI</i> | <i>n</i> | <i>r<sub>pb</sub></i> | <i>AUC</i> | <i>95% CI</i> |
| Leisure strengths     | 250      | -.13*                 | .44        | [.37, .52]   | 148      | -.13                  | .45        | [.35, .54]    | 102      | -.16                  | .43        | [.31, .54]    |
| Personality strengths | 250      | -.06                  | .49        | [.41, .56]   | 148      | .00                   | .50        | [.41, .59]    | 102      | -.15                  | .46        | [.34, .58]    |
| Attitudes strengths   | 249      | -.17**                | .44        | [.37, .51]   | 148      | -.14                  | .45        | [.36, .55]    | 101      | -.24*                 | .41        | [.30, .53]    |

*Note.* YASI (Orbis Partners, 2000). YASI-GI (Gender informed; Orbis Partners, 2011). \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$

*Incremental validity of strength factors at the global level – strengths as a protective effect?* To assess whether strength domains had a protective effect on risk (i.e., buffer or reduce risk) in the prediction of recidivism, a series of hierarchical logistic regression models were conducted in SPSS for each assessment (YASI pre-screen and full assessment and YASI-GI pre-screen and full assessment). The model was specified for each assessment as follows - in the first block of the hierarchical logistic regression model the YASI/YASI-GI total risk score and the YASI/YASI-GI total strength score were entered. The second block of the model included the interaction term between the two variables (total risk score and total protective score). If the interaction term in these models was significant then there was evidence of a protective effect (i.e., that the strength score buffers or reduces the risk score).

In general, the results of these logistic regression do not support the hypothesis that the total strengths scores for the YASI and YASI-GI have a protective effect (i.e., buffer or reduces the total risk) for general or violent recidivism. This is demonstrated by the non-significant interaction terms for all of the models across both general and violent recidivism for males and females. It should be noted that a significant interaction was found for the YASI full assessment total protective score as well as the YASI-GI full assessment total protective score, however as discussed earlier with the previous set of logistic regression analysis, to avoid capitalizing on chance in finding a significant effect, the effect size should be adjusted to account for the number of separate logistic regression analyses conducted ( $\alpha = .05/8 = .006$ ) and the interactions terms as this level of alpha would no longer be significant as  $p$  for these interactions were  $> .01$  and  $< .05$ . As a result, these interactions were not investigated or analyzed further.

Finally, an exploratory analysis was also conducted to examine the incremental validity of the YASI/YASI-GI total protective score (from the pre-screen and the full assessment) when added into a predictive model with YLS/CMI total risk score and a model with PCL:YV total risk score. These results are presented in Tables 41 (general recidivism) and 42 (violent recidivism). Consistent with the results when the total protective score was added to the YASI/YASI-GI total risk scores, significant interactions were not found when alpha was adjusted for the number of logistic models conducted. Thus, the total protective scores from the YASI/YASI-GI do not add incrementally to the total risk scores of established risk assessment models in the prediction of general and violent recidivism.

The results from this study do not conclusively support the construct of strengths as having a protective effect on risk at the global level, however given the negative relationship associated with recidivism as demonstrated in the bivariate analysis, there is support to conceptualize the strength factors of the YASI models and YLS/CMI as promotive (i.e., inversely related to risk; Farrington, 2003; Loeber et al., 2007; Van der Put et al., 2011). The results for the strengths domains as protective need to be interpreted with caution as it is possible that there was insufficient power to find a significant effect and/or some models (particularly with the males) approached significance. The notion of strengths as protective warrants further empirical work with a different and larger sample.

Table 37

*Incremental Validity of Strength Factors of the YASI and YASI-GI in the Prediction of General Recidivism - Males*

|   | <i>B (SE)</i> | Wald $\chi^2$ | <i>OR [95% CI]</i> | Model Fit                      |
|---|---------------|---------------|--------------------|--------------------------------|
| <i>Original YASI pre-screen</i>                     |               |               |                    | $\chi^2 (2) = 16.06, p < .01$  |
| Pre-screen total risk                               | .07 (.04)     | 2.59          | 1.07 [ .99, 1.16]  |                                |
| Pre-screen total protective                         | -.04 (.17)    | .06           | .96 [ .68, 1.34]   |                                |
| Pre-screen total risk * pre-screen total protective | .00 (.01)     | .09           | 1.00 [ .99, 1.02]  |                                |
| <i>Original YASI full assessment</i>                |               |               |                    | $\chi^2 (2) = 23.36, p < .001$ |
| YASI total risk                                     | -.02 (.03)    | .49           | .98 [ .92, 1.04]   |                                |
| YASI total protective                               | -.10 (.05)    | 4.71*         | .91 [ .83, .99]    |                                |
| YASI total risk * YASI total protective             | .00 (.00)     | 1.79          | 1.00 [1.00, 1.00]  |                                |
| <i>YASI-GI pre-screen</i>                           |               |               |                    | $\chi^2 (2) = 12.91, p < .05$  |
| YASI-GI pre-screen total risk                       | .03 (.03)     | .70           | 1.03 [ .96, 1.10]  |                                |
| YASI-GI pre-screen total protective                 | -.11 (.15)    | .55           | .90 [ .67, 1.20]   |                                |
| Pre-screen total risk * pre-screen total protective | .00 (.00)     | .18           | 1.00 [ .99, 1.01]  |                                |

|  | <i>B (SE)</i> | Wald $\chi^2$ | <i>OR [95% CI]</i> | Model Fit                      |
|--|---------------|---------------|--------------------|--------------------------------|
| <i>YASI-GI full assessment</i>                   |               |               |                    | $\chi^2 (2) = 24.35, p < .001$ |
| YASI-GI total risk                               | -.02 (.02)    | 1.13          | .98 [ .93, 1.02]   |                                |
| YASI-GI total protective                         | -.08 (.03)    | 6.48*         | .92 [ .93, .98]    |                                |
| YASI-GI total risk * YASI-GI<br>total protective | .00 (.00)     | 1.99          | 1.00 [1.00, 1.00]  |                                |

*Note.* YASI (Orbis Partners, 2000). YASI-GI (Gender informed; Orbis Partners, 2011). \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$

Table 38

*Incremental Validity of Strength Factors of the YASI and YASI-GI in the Prediction of General Recidivism - Females*

|   | <i>B (SE)</i> | Wald $\chi^2$ | <i>OR [95% CI]</i> | Model Fit               |
|---|---------------|---------------|--------------------|-------------------------|
| <i>Original YASI pre-screen</i>                     |               |               |                    | $\chi^2 (2) = 5.80, ns$ |
| Pre-screen total risk                               | .04 (.04)     | .97           | 1.04 [ .96, 1.12]  |                         |
| Pre-screen total protective                         | -.16 (.28)    | .32           | .86 [ .50, 1.47]   |                         |
| Pre-screen total risk * pre-screen total protective | .01 (.01)     | .37           | 1.01 [ .99, 1.03]  |                         |
| <i>Original YASI full assessment</i>                |               |               |                    | $\chi^2 (2) = 7.07, ns$ |
| YASI total risk                                     | .00 (.04)     | .00           | 1.00 [ .94, 1.07]  |                         |
| YASI total protective                               | -.06 (.06)    | .90           | .94 [ .84, 1.06]   |                         |
| YASI total risk * YASI total protective             | .00 (.00)     | .46           | 1.00 [1.00, 1.00]  |                         |
| <i>YASI-GI pre-screen</i>                           |               |               |                    | $\chi^2 (2) = 5.09, ns$ |
| YASI-GI pre-screen total risk                       | -.00 (.03)    | .01           | 1.00 [ .93, 1.07]  |                         |
| YASI-GI pre-screen total protective                 | -.29 (.23)    | 1.55          | .75 [ .47, 1.18]   |                         |
| Pre-screen total risk * pre-screen total protective | .01 (.01)     | 1.44          | 1.01 [1.00, 1.02]  |                         |

|  | <i>B (SE)</i> | Wald $\chi^2$ | <i>OR [95% CI]</i> | Model Fit               |
|--|---------------|---------------|--------------------|-------------------------|
| <i>YASI-GI full assessment</i>                   |               |               |                    | $\chi^2 (2) = 5.10, ns$ |
| YASI-GI total risk                               | .00 (.02)     | .00           | 1.00 [ .95, 1.05]  |                         |
| YASI-GI total protective                         | -.04 (.04)    | .80           | .96 [ .89, 1.05]   |                         |
| YASI-GI total risk * YASI-GI<br>total protective | .00 (.00)     | .29           | 1.00 [1.00, 1.00]  |                         |

*Note.* YASI (Orbis Partners, 2000). YASI-GI (Gender informed; Orbis Partners, 2011). \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$

Table 39

*Incremental Validity of Strength Factors of the YASI and YASI-GI in the Prediction of Violent Recidivism - Males*

|   | <i>B (SE)</i> | Wald $\chi^2$ | <i>OR [95% CI]</i> | Model Fit                      |
|---|---------------|---------------|--------------------|--------------------------------|
| <i>Original YASI pre-screen</i>                     |               |               |                    | $\chi^2 (2) = 11.43, p < .05$  |
| Pre-screen total risk                               | .04 (.04)     | 1.22          | 1.04 [.97, 1.12]   |                                |
| Pre-screen total protective                         | -.09 (.17)    | .28           | .92 [.66, 1.28]    |                                |
| Pre-screen total risk * pre-screen total protective | .00 (.01)     | .01           | 1.00 [.99, 1.01]   |                                |
| <i>Original YASI full assessment</i>                |               |               |                    | $\chi^2 (2) = 18.41, p < .001$ |
| YASI total risk                                     | -.04 (.03)    | 1.54          | .96 [ .91, 1.02]   |                                |
| YASI total protective                               | -.11 (.05)    | 5.46*         | .89 [ .81, .98]    |                                |
| YASI total risk * YASI total protective             | .00 (.00)     | 2.15          | 1.00 [1.00, 1.00]  |                                |
| <i>YASI-GI pre-screen</i>                           |               |               |                    | $\chi^2 (2) = 10.68, p < .05$  |
| YASI-GI pre-screen total risk                       | .02 (.03)     | .28           | 1.02 [ .96, 1.08]  |                                |
| YASI-GI pre-screen total protective                 | -.14 (.15)    | .83           | .87 [ .65, 1.17]   |                                |
| Pre-screen total risk * pre-screen total protective | .00 (.00)     | .02           | 1.00 [ .99, 1.01]  |                                |

|  | <i>B (SE)</i> | Wald $\chi^2$ | <i>OR [95% CI]</i> | Model Fit                      |
|--|---------------|---------------|--------------------|--------------------------------|
| <i>YASI-GI full assessment</i>                   |               |               |                    | $\chi^2 (2) = 20.23, p < .001$ |
| YASI-GI total risk                               | -.04 (.02)    | 2.78          | .96 [ .92, 1.01]   |                                |
| YASI-GI total protective                         | -.10 (.04)    | 7.43*         | .90 [ .84, .97]    |                                |
| YASI-GI total risk * YASI-GI<br>total protective | .00 (.00)     | 2.70          | 1.00 [1.00, 1.00]  |                                |

*Note.* YASI (Orbis Partners, 2000). YASI-GI (Gender informed; Orbis Partners, 2011). \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$

Table 40

*Incremental Validity of Strength Factors of the YASI and YASI-GI in the Prediction of General Recidivism - Females*

|   | <i>B (SE)</i> | Wald $\chi^2$ | <i>OR [95% CI]</i> | Model Fit                     |
|---|---------------|---------------|--------------------|-------------------------------|
| <i>Original YASI pre-screen</i>                     |               |               |                    | $\chi^2 (2) = 12.00, p < .05$ |
| Pre-screen total risk                               | .10 (.05)     | 4.29*         | 1.11 [1.01, 1.22]  |                               |
| Pre-screen total protective                         | .07 (.34)     | .04           | 1.07 [ .55, 2.10]  |                               |
| Pre-screen total risk * pre-screen total protective | .00 (.01)     | .01           | 1.00 [ .98, 1.03]  |                               |
| <i>Original YASI full assessment</i>                |               |               |                    | $\chi^2 (2) = 15.42, p < .01$ |
| YASI total risk                                     | .02 (.05)     | .21           | 1.02 [ .93, 1.12]  |                               |
| YASI total protective                               | -.08 (.09)    | .74           | .93 [ .78, 1.11]   |                               |
| YASI total risk * YASI total protective             | .00 (.00)     | .98           | 1.00 [1.00, 1.01]  |                               |
| <i>YASI-GI pre-screen</i>                           |               |               |                    | $\chi^2 (2) = 9.75, p < .05$  |
| YASI-GI pre-screen total risk                       | .02 (.03)     | .28           | 1.02 [ .96, 1.08]  |                               |
| YASI-GI pre-screen total protective                 | -.14 (.15)    | .83           | .87 [ .65, 1.17]   |                               |
| Pre-screen total risk * pre-screen total protective | .00 (.00)     | .02           | 1.00 [ .99, 1.01]  |                               |

|  | <i>B (SE)</i> | Wald $\chi^2$ | <i>OR [95% CI]</i> | Model Fit                     |
|--|---------------|---------------|--------------------|-------------------------------|
| <i>YASI-GI full assessment</i>                   |               |               |                    | $\chi^2 (2) = 11.72, p < .05$ |
| YASI-GI total risk                               | .02 (.03)     | .23           | 1.02 [ .96, 1.08]  |                               |
| YASI-GI total protective                         | -.04 (.06)    | .56           | .96 [ .85, 1.07]   |                               |
| YASI-GI total risk * YASI-GI<br>total protective | .00 (.00)     | .89           | 1.00 [1.00, 1.00]  |                               |

*Note.* YASI (Orbis Partners, 2000). YASI-GI (Gender informed; Orbis Partners, 2011). \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$

Table 41

*Incremental Validity of Strength Factors of the YASI and YASI-GI in the Prediction of General Recidivism with the YLS/CMI and PCL:YV - Males*

|   | <i>B (SE)</i> | Wald $\chi^2$ | <i>OR [95% CI]</i> | Model Fit                      |
|---|---------------|---------------|--------------------|--------------------------------|
| <b><i>General Recidivism</i></b>                                  |               |               |                    |                                |
| <i>YLS/CMI risk &amp; YASI full assessment protective</i>         |               |               |                    | $\chi^2 (2) = 22.01, p < .001$ |
| YLS/CMI total score (risk)  | .02 (.09)     | .07           | 1.02 [ .87, 1.21]  |                                |
| YASI total protective   | -.06 (.04)    | 2.41          | .94 [ .87, 1.02]   |                                |
| YLS/CMI total score * YASI total protective                       | .00 (.00)     | .04           | 1.00 [1.00, 1.01]  |                                |
| <i>YLS/CMI risk &amp; YASI-GI full assessment protective</i>      |               |               |                    | $\chi^2 (2) = 23.45, p < .001$ |
| YLS/CMI total score (risk)  | .01 (.09)     | .01           | 1.01 [ .85, 1.20]  |                                |
| YASI-GI total protective  | -.06 (.03)    | 2.96          | .95 [ .89, 1.01]   |                                |
| YLS/CMI total score * YASI-GI total protective                    | .00 (.00)     | .13           | 1.00 [1.00, 1.00]  |                                |
| <i>PCL:YV risk &amp; original YASI full assessment protective</i> |               |               |                    | $\chi^2 (2) = 20.79, p < .001$ |
| PCL:YV total score (risk)   | -.01 (.08)    | .03           | .99 [ .84, 1.16]   |                                |
| YASI total protective   | -.07 (.04)    | 4.42*         | .93 [ .87, 1.00]   |                                |
| PCL:YV total score * YASI   | .00 (.00)     | .04           | 1.00 [1.00, 1.00]  |                                |

|   | <i>B (SE)</i> | Wald $\chi^2$ | <i>OR [95% CI]</i> | Model Fit                      |
|---|---------------|---------------|--------------------|--------------------------------|
| total protective  |               |               |                    |                                |
| <i>PCL:YV risk &amp; YASI-GI full assessment protective</i>       |               |               |                    | $\chi^2 (2) = 22.22, p < .001$ |
| PCL:YV total score (risk)   | -.02 (.08)    | .07           | .98 [ .83, 1.15]   |                                |
| YASI-GI total protective  | -.06 (.03)    | 4.81*         | .94 [ .89, .99]    |                                |
| PCL:YV total score * YASI-GI total protective                     | .00 (.00)     | .07           | 1.00 [1.00, 1.00]  |                                |
| <b><i>Violent recidivism</i></b>                                  |               |               |                    |                                |
| <i>YLS/CMI risk &amp; YASI full assessment protective</i>         |               |               |                    | $\chi^2 (2) = 16.59, p < .01$  |
| YLS/CMI total score (risk)  | -.04 (.08)    | .32           | .95 [ .81, 1.12]   |                                |
| YASI total protective   | -.08 (.04)    | 3.59          | .92 [ .85, 1.00]   |                                |
| YASI total risk * YASI pre-screen total protective                | .00 (.00)     | .56           | 1.00 [1.00, 1.01]  |                                |
| <i>YLS/CMI &amp; YASI full assessment</i>                         |               |               |                    | $\chi^2 (2) = 19.77, p < .001$ |
| YASI-GI total risk  | -.11 (.08)    | 2.13          | .89 [ .77, 1.04]   |                                |
| YASI-GI total protective  | -.10 (.04)    | 7.14*         | .90 [ .84, .97]    |                                |
| YASI-GI total risk * YASI total protective                        | .00 (.00)     | .54           | 1.00 [1.00, 1.01]  |                                |
| <i>PCL:YV risk &amp; original YASI full assessment protective</i> |               |               |                    | $\chi^2 (2) = 21.21, p < .001$ |
| PCL:YV total score (risk)   | -.11 (.08)    | 2.13          | .89 [ .77, 1.04]   |                                |

|   | <i>B (SE)</i> | Wald $\chi^2$ | <i>OR [95% CI]</i> | Model Fit                      |
|---|---------------|---------------|--------------------|--------------------------------|
| YASI total protective                                       | -.10 (.04)    | 7.14*         | .90 [ .84, .97]    |                                |
| PCL:YV total score * YASI<br>total protective               | .00 (.00)     | .54           | 1.00 [1.00, 1.01]  |                                |
| <i>PCL:YV risk &amp; YASI-GI full assessment protective</i> |               |               |                    | $\chi^2 (2) = 21.21, p < .001$ |
| PCL:YV total score (risk)                                   | -.13 (.08)    | 2.58          | .88 [ .76, 1.03]   |                                |
| YASI-GI total protective                                    | -.09 (.03)    | 7.91*         | .92 [ .86, .97]    |                                |
| PCL:YV total score * YASI-GI<br>total protective            | .00 (.00)     | .76           | 1.00 [1.00, 1.01]  |                                |

*Note.* YASI (Orbis Partners, 2000). YASI-GI (Gender informed; Orbis Partners, 2011). \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$

Table 42

*Incremental Validity of Strength Factors of the YASI and YASI-GI in the Prediction of General Recidivism with the YLS/CMI and PCL:YV - Females*

|  | <i>B (SE)</i> | Wald $\chi^2$ | <i>OR [95% CI]</i> | Model Fit                      |
|--|---------------|---------------|--------------------|--------------------------------|
| <b><i>General Recidivism</i></b>                                   |               |               |                    |                                |
| <i>YLS/CMI risk &amp; original YASI full assessment protective</i> |               |               |                    | $\chi^2 (2) = 17.34, p < .05$  |
| YLS/CMI total score (risk)   | -.18 (.12)    | 2.19          | .84 [ .66, 1.06]   |                                |
| YASI total protective  | -.19 (.08)    | 5.37*         | .83 [ .71, .97]    |                                |
| YLS/CMI total score * YASI total protective                        | .01 (.00)     | 5.82*         | 1.01 [1.00, 1.02]  |                                |
| <i>YLS/CMI risk &amp; YASI-GI full assessment protective</i>       |               |               |                    | $\chi^2 (2) = 18.20, p < .001$ |
| YLS/CMI total score (risk)   | -.19 (.12)    | 2.45          | .83 [ .66, 1.05]   |                                |
| YASI-GI total protective   | -.15 (.06)    | 5.71*         | .86 [ .76, .97]    |                                |
| YLS/CMI total score * YASI-GI total protective                     | .01 (.00)     | 6.43*         | 1.01 [1.00, 1.01]  |                                |
| <i>PCL:YV risk &amp; original YASI full assessment protective</i>  |               |               |                    | $\chi^2 (2) = 9.39, p < .05$   |
| PCL:YV total score (risk)  | -.01 (.08)    | .03           | .99 [ .84, 1.16]   |                                |
| YASI total protective  | -.07 (.04)    | 4.42*         | .93 [ .87, 1.00]   |                                |

|   | <i>B (SE)</i> | Wald $\chi^2$ | <i>OR [95% CI]</i> | Model Fit                      |
|---|---------------|---------------|--------------------|--------------------------------|
| PCL:YV total score * YASI<br>total protective               | .00 (.00)     | .04           | 1.00 [1.00, 1.00]  |                                |
| <i>PCL:YV risk &amp; YASI-GI full assessment protective</i> |               |               |                    | $\chi^2 (2) = 9.08, p < .05$   |
| PCL:YV total score (risk)                                   | -.02 (.08)    | .79           | .98 [ .83, 1.15]   |                                |
| YASI-GI total protective                                    | -.06 (.04)    | 1.72          | .94 [ .87, 1.03]   |                                |
| PCL:YV total score * YASI-GI<br>total protective            | .00 (.00)     | .97           | 1.00 [1.00, 1.01]  |                                |
| <b><i>Violent recidivism</i></b>                            |               |               |                    |                                |
| <i>YLS/CMI risk &amp; YASI full assessment protective</i>   |               |               |                    | $\chi^2 (2) = 17.58, p < .01$  |
| YLS/CMI total score (risk)                                  | -.06 (.13)    | .21           | .94 [ .72, 1.22]   |                                |
| YASI total protective                                       | -.15 (.10)    | 2.21          | .86 [ .71, 1.05]   |                                |
| YLS/CMI total score * YASI<br>total protective              | .01 (.01)     | 2.65          | 1.01 [1.00, 1.02]  |                                |
| <i>YLS/CMI &amp; YASI full assessment protective</i>        |               |               |                    | $\chi^2 (2) = 18.43, p < .001$ |
| YLS/CMI total score (risk)                                  | -.07 (.14)    | .25           | .94 [ .72, 1.22]   |                                |
| YASI-GI total protective                                    | -.11 (.08)    | 2.22          | .89 [ .77, 1.04]   |                                |
| YLS/CMI total score * YASI<br>total protective              | .01 (.00)     | 3.10          | 1.01 [1.00, 1.01]  |                                |
| <i>PCL:YV risk &amp; YASI full assessment protective</i>    |               |               |                    | $\chi^2 (2) = 15.92, p < .01$  |
| PCL:YV total score (risk)                                   | .08 (.13)     | .34           | 1.08 [ .84, 1.39]  |                                |

|   | <i>B (SE)</i> | Wald $\chi^2$ | <i>OR [95% CI]</i> | Model Fit                     |
|---|---------------|---------------|--------------------|-------------------------------|
| YASI total protective                               | -.06 (.08)    | .55           | .94 [ .81, 1.10]   |                               |
| PCL:YV total score * YASI<br>total protective       | .00 (.00)     | .32           | 1.00 [ .99, 1.01]  |                               |
| <i>PCL:YV &amp; YASI full assessment protective</i> |               |               |                    | $\chi^2 (2) = 15.56, p < .01$ |
| PCL:YV total score                                  | .09 (.12)     | .50           | 1.09 [ .86, 1.39]  |                               |
| YASI-GI total protective                            | -.04 (.06)    | .38           | .97 [ .86, 1.08]   |                               |
| PCL:YV total score * YASI<br>total protective       | .00 (.00)     | .35           | 1.00 [1.00, 1.01]  |                               |

*Note.* YASI (Orbis Partners, 2000). YASI-GI (Gender informed; Orbis Partners, 2011). \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$

### Validation Study Summary and Conclusions

The primary goal of this research study was to empirically validate the psychometric properties of the original YASI and a gender informed version of the YASI (YASI-GI). Using a sample of justice-involved male and female youth allowed for gender comparisons in instrument validity on the components of risk and strengths. Two well-known validated assessment instruments, the YLS/CMI and the PCL:YV were also included for comparative purposes.

Predictive validity of the instruments was examined at both the global level (i.e., total scores) and domain level (e.g., social networks, attitudes) for both risk and strength components. Specifically, discrimination of the instruments was examined using bivariate analysis of point biserial correlations ( $r_{pb}$ ) and areas under the receiver operator characteristic curves ( $AUC$ ) for general and violent recidivism. Calibration of the assessments was examined through plots of predictive probabilities of recidivism at the categorical level of the total scale scores. As well, convergent validity was measured by correlating the YASI and YASI-GI total scores and domain scores with the corresponding scores on the YLS/CMI and PCL:YV scales. To examine the contribution of the strengths component of the YASI/YASI-GI a series of logistic regressions and bivariate analysis was conducted to determine domains significantly related to successful outcome (i.e., no general or violent recidivism). Finally, the incremental validity strengths of the YASI/YASI-GI was also examined through a series of hierarchical logistic regressions to determine if there was evidence for the conceptualization of strengths as protective (i.e., buffer or influence risk). The analyses conducted allowed for comparisons across gender to determine evidence for gender neutrality (equally predictive for both males and

females), gender saliency (equally predictive for both males and females however stronger in magnitude for one gender over the other), or gender specificity (predictive for one gender and not the other) of domain level scores.

### **Overview of Key Findings**

Together the results confirm that the YASI and YASI-GI models in both the pre-screen and full assessment formats are valid measures to assess risk and strengths among justice-involved youth. The overall predictive accuracy of both models (YASI and YASI-GI) in both formats (pre-screen and full assessment) was found to be moderately predictive ( $.63 < AUC < .71$ ) of general recidivism and violent recidivism, consistent with previous empirical work that has been conducted by the scale developers (Jones, 2011; Jones et al., 2016; Orbis Partners, 2007a). Importantly, the interrater reliability of the assessment scales used in the study (YASI, YASI-GI, YLS/CMI, PCL:YV) were mostly good or excellent at the global level (i.e., total scores).

**Discrimination at the global level.** As hypothesized, both the original YASI and the gender informed YASI (YASI-GI) predicted general and violent recidivism with moderate predictive accuracy and the results were comparable to the predictive accuracy demonstrated for the YLS/CMI and the PCL:YV assessments. Interestingly, larger effects emerged for the YASI and YASI-GI for females and violent recidivism and larger effects emerged for the males for general recidivism. Contrary to the hypothesis, the YASI-GI (pre-screen and full assessment) did not emerge with superior predictive accuracy for the females as expected – the reported *AUC* values were slightly higher for the original YASI total scores for both the pre-screen and full assessment. Another noteworthy finding from this study is that the pre-screen total protective score for both the YASI and YASI-GI

found only small effects (males only) and was not significantly contributing to the overall prediction of either general or violent recidivism. Importantly, a total protective score for the pre-screen is not calculated in practice and the findings of this study support that there is no additional value added by calculating this score for predictive purposes; there are too few items in the pre-screen to calculate a meaningful total that adds utility to the prediction model.

**Calibration at the global level.** Calibration was assessed by plotting the predicted probabilities of recidivism and total risk scores from each of the assessment instruments – YASI and YASI-GI pre-screen and full assessment, YLS/CMI, and PCL:YV. As expected, all of the calibration plots demonstrated a linear relationship between the predicted probability of recidivism and total risk score; as the risk score increased, the total probability of recidivism also increased. For the pre-screen total risk score and the full assessment adjusted total risk score, the results demonstrated good calibration for general and violent recidivism and results were comparable to the calibration plots for the YLS/CMI and PCL:YV.

**Discrimination at the domain level.** Some interesting findings emerged for the prediction of recidivism at the domain level. For general recidivism, two of the ten domains were significantly predictive for females and no domains were found to be female specific or female salient as hypothesized. The only hypothesized domain that emerged as significant for females and general recidivism was social networks however this domain was determined to be gender neutral as it was also significantly predictive for males. The other domains hypothesized to be salient for females – substance use, mental health, and family were not significant for females and general recidivism. Interestingly

family history and substance abuse emerged as significantly predictive of general recidivism for males only (i.e., male specific). These findings are not consistent with the significant YLS/CMI domains that emerged as significant for general recidivism – peers, substance use, attitudes, and personality were identified as significant though gender neutral in the prediction of general recidivism as were found to be equally predictive for both males and females. The results for violent recidivism however demonstrate some interesting findings. Specifically, for violent recidivism the criminal history, substance use, and violence and aggression domains were significant for both males and females (i.e., gender neutral). Interestingly however, for violent recidivism the social networks domain emerged as female salient (predictive for both males and females however a larger effect for females –  $AUC$  for YASI full assessment = .76) and attitudes emerged as female specific factor that was moderately predictive ( $AUC = .65$ ) of violent recidivism.

Overall, the bivariate results for the YASI and YASI-GI are consistent – in this study, there was better discrimination for the males for general recidivism and better discrimination for females for violent recidivism. One possible explanation for these results could be a function of the sample of the study. As previously indicated, though the mean YLS/CMI total score fell within the moderate risk assessment category, and for the PCL:YV the low risk category, it is more likely that the youth in the current sample are higher risk particularly in light of the base rates for recidivism for these youth – 57.5% general and 40.9% violent. As such, it is entirely possible that the sample in this study is not a representative of justice involved youth, particularly young females, as the base rate for recidivism for the females in study is also high – 45.3% general and 28.3% violent. Perhaps the assessment instruments are sensitive to this base rate and reliably

discriminating a group of females with higher than normal risk and needs than would be expected in a population of justice-involved females. Perhaps something akin to the gender paradox is occurring within this study and that the sample of included females represents a group of females with more severe pathology and comorbid disorders. The gender paradox is said to occur when the prevalence or occurrence of a pathology or comorbidity of conditions in a particular group (i.e., females) is lower, however if/when the pathology of comorbid conditions are present in the group, the expression or etiology of the pathology will be more serious (Loeber & Keenan, 1994; Reef, Donker, Meurs, & Verhulst, 2011). Perhaps the sample of females in this study represents a particular subgroup of females with more severe pathology and comorbidity than would be expected in an average justice-involved population of female youth and the assessments are achieving greater sensitivity in identifying this risk among females for violent recidivism.

**Convergent validity between the original YASI and YASI-GI with other established risk assessment instruments.** Overall, large correlations ( $r > .37$ ; Rice and Harris, 2005) were observed between the YASI/YASI-GI domains of the full assessment and the corresponding domains of the YLS/CMI and four factors of the PCL:YV, as expected. At the global level, good convergent validity was demonstrated with correlations greater than .70 between the total risk scores on the YASI/YASI-GI and the YLS/CMI and PCL:YV total scores indicating that the YASI assessment instruments are tapping into similar constructs of well-known risk assessment instruments. For the protective scales of the YASI/YASI-GI, the correlations were still large (i.e., greater than .37) however the magnitude was not as large. The smaller correlations were not entirely unexpected as the domains of the YASI/YASI-GI are systematic inclusion of several

factors within a domain to assess the factor as strength compared to the YLS/CMI strengths which are measured dichotomously (yes/no) whether the domain is considered a strength. In general, the YASI/YASI-GI pre-screen total protective scores were correlated with the YLS/CMI total strength ( $r = .43$ ), as well as the full assessment total protective score with YLS/CMI total strength ( $r = .54$ ).

**Predictive validity of strengths.** The predictive validity of strengths was assessed from an examination of the total contribution of strength to the prediction of risk at the global level (i.e., total scores), bivariate prediction of strengths relating to successful outcome (i.e., no recidivism) at the domain level, and incremental validity of total strengths in the prediction of recidivism outcome when added to models with total risk score.

*Contribution of total strengths in the prediction of recidivism.* Contrary to the stated hypotheses, the total protective score of the YASI and YASI-GI did not find conclusive evidence for the contribution of total strengths scores in the prediction of recidivism. For males however, the total protective score for the YASI and YASI-GI approached significance ( $p < .05$ ). It is possible that there was insufficient power to detect a significant effect and/or that the combination of strength factors that comprises the total protective score for the YASI and YASI-GI needs to be further tested and refined, particularly for the girls. Further research to investigate the effect of adding strength factors to estimates of risk is warranted.

*Bivariate prediction of success from domain level strengths.* At the domain level, all domains for the original YASI with the exception of one (school) were significantly predictive of success for males – family history, social networks, attitudes,

social/cognitive skills, employment and free time, and violence and aggression were significantly predictive of success (no recidivism) for males. Notably the additional protective domains for the YASI-GI were not significant – mental health and substance abuse. For the females, only three domains emerged as significant for the strength domains – social networks, attitudes, and employment. For the no violent recidivism outcome, a few more strength domains emerged as significant for both males and females – attitudes, employment, and violence and aggression. In general, there was no specificity or saliency for strengths for females at the domain level and only a few factors that were significantly predictive for the males. The results of the domain level analysis suggest that further refinement of domains as strengths, including a review of individual items being included is potentially warranted, particularly for girls.

*Incremental validity of total strength scores in the prediction of recidivism.* The hypothesis that total strength scores from the pre-screen and full assessment would add incrementally to the prediction of recidivism above and beyond the total risk score was not supported. The series of hierarchical logistic regression models did not consistently demonstrate a significant interaction between the total risk score and the total strength score as expected. As a result, there was no conclusive evidence from this study to support the conceptualization of the total strength score from the YASI models as protective (i.e., that buffer or reduce the total risk score), though some models approached significance suggesting further investigation to measure strengths as protective is warranted.

An exploratory analysis was also conducted to examine the incremental validity of the YASI/YASI-GI total protective score with the YLS/CMI and PCL:YV total risk

score in the prediction of recidivism. Consistent with the results that added the YASI/YASI-GI total protective score to the YASI/YASI-GI total risk score, significant interactions with the YLS/CMI or PCL:YV total risk were not found when alpha was adjusted for the number of tests conducted. Based on the results, the YASI/YASI-GI strengths approached significance ( $p < .05$ ) however the strengths as measured by the YLS/CMI did not, thus suggesting the YASI/YASI-GI strengths as conceptualized are better indicators.

Together, these results provide evidence for the validity of the YASI and YASI-GI as risk assessments for justice-involved with comparable predictive accuracy to other established risk assessment instruments. Importantly, the addition of the gender responsive variables in the YASI-GI do not appear to be contributing significantly to the prediction of recidivism, particularly among females suggesting that the original YASI is a valid assessment for both male and female youth. One possible explanation for this finding is that the original YASI is gender informed with the inclusion of the domains of mental health and specific items pertaining to hypothesized gender responsive items (e.g., level of conflict between family members, level of support within family unit, circumstances of family living in the household, attachment and quality of peer relationships). Another possibility as previously mentioned is that the inclusion of gender responsive items in the YASI-GI were not sufficiently sensitive to capture the essence of the female experience that have been demonstrated as qualitatively different (Daly, 1992; Daly & Chesney-Lind, 1998; Dehart, 2008; Gilfus, 1992; Hannah-Moffat, 2010; Ritchie, 1996; Simpson et al., 2008; Van Voorhis, 2012). Finally, the results of the analysis pertaining to the strength domains were able to demonstrate some evidence of gender

differences (albeit limited), the significance of strengths factors in the prediction of success (i.e., no recidivism) from the bivariate prediction warrants further investigation, particularly for the girls.

### **Implications for Theory**

**From gender neutral to gender responsive: merging theoretical frameworks in the development of a valid gender informed assessment of risk.** The purpose of this study was primarily to investigate the properties of the YASI model as a valid assessment of risk for justice-involved youth. The YASI framework, adapted by Orbis from the Washington Juvenile Risk Assessment Instrument (Washington State Institute for Public Policy, 1999) that combines risk, need, and protective factors is the culmination of factors from a gender neutral approach and a gender responsive approach. Specifically, the domains of criminal history, family history, school/education, community and peers, substance use, aggression and violence, attitudes, skills, and employment and free time are comprised of individual indicators that map on to the *Central Eight* correlates of crime put forward from a gender neutral perspective (Bonta & Andrews, 2017). However, within the original YASI there are additional items included within many of the domains that map on to gender responsive theory such as: history of running away, times kicked out of the home, circumstances of family members living within the home, level of conflict between family members, level of support within family, type and quality of social networks, mental health (including victimization, physical and sexual abuse, sexual vulnerability), and optimism about the future). As demonstrated, the findings from this research indicate that the YASI model is a valid assessment for prediction of general and violent recidivism among justice-involved youth. Chiefly, the

results provide evidence in favour of the inclusion of specific factors from both approaches and provide evidence for gender saliency at the domain level, particularly for indicators of risk. Lastly, the results of this study suggest the domains as strengths need to be further refined to ensure their relevance, particularly for the females. More research with different, larger samples could assist in validating the items, particularly for the strength factors.

*Importance of peers and attitudes for females.* Within this sample, the risk domains for antisocial peers (social networks) and antisocial attitudes were consistently predictive in the bivariate logistic regression models for females, particularly for violent recidivism and with the YASI/YASI-GI full assessment and YLS/CMI. As antisocial peers and attitudes are within the *Central Eight*, it is well established that these are significantly associated with a negative outcome (i.e., recidivism). What is interesting is the magnitude of the effects for these two domains for violent recidivism. Becker and McCorkell (2011) found that in the presence of male co-offenders, the range of offences that females will become involved in is extended, including violent offences (e.g., robbery, homicide, kidnapping). Jones (2008) also speaks to the influence of criminal romantic partners and offending patterns of women, gleaned from interviews of justice-involved women in the U.K. The influence of co-offenders was not specifically examined in the current study, but could be a plausible explanation for the significance of peer relations for females in relation to violent recidivism. Further research that is able to unpack the importance of dysfunctional peer relationships, as well as the influence of criminal romantic partners would contribute a better understanding of the importance of peer associations with female offenders, particularly in how it relates to violence.

Similarly, there is a vast amount of literature which has established antisocial attitudes as an important risk factor. It is interesting that this domain is a significant predictor for the females for violence, however was only significant for general recidivism for the males. As previously speculated, it is plausible the females in the current sample are representative of a higher risk group willing to carry out significant or violent behaviour and as such logically would possess the attitudes that would encourage antisocial and violent behaviour. Further research is needed to better understand this link particularly given that gender responsive researchers pay little attention to the role of attitudes.

*Mental health as promotive or protective, or is it specific responsivity?*

Interestingly, the mental health domain was not predictive of either general or violent recidivism for either the YASI full original or the YASI-GI full assessment, for males or females. In both the bivariate analysis and logistic regression models, mental health demonstrated a negative relationship with recidivism outcome. This inverse relationship (though not significant) could suggest that mental health be operationalized as a promotive factor (i.e., the presence of mental health problems decreases the likelihood of recidivism or criminal conduct). However, the relationship between mental health and recidivism does not appear to be straightforward and there is significant variability reported in the literature (Bonta, Blais, & Wilson, 2014). Further research is needed to resolve how mental health should be defined (McCormick, Peterson-Badali, & Skilling, 2017) and more investigation is needed into how mental health influences negative outcomes, such as criminal conduct and recidivism – is it promotive, protective or should it be treated as a responsivity factor? McCormick et al. (2017) discuss the

possibility that mental health is a barrier that can impede on engagement in interventions targeted at criminogenic needs if not sufficiently addressed. In their meta-analytic review of risk factors for the prediction of general and violent recidivism for mentally disordered offenders, Bonta et al. (2014) found no significant relationship between clinical variables (e.g., mood disorder, psychosis, treatment history) and recidivism (either general or violent). Further, they conclude that the focus of intervention efforts should remain on factors that show the most promise for reductions in recidivism when changed (i.e., the *Central Eight*). Others suggest the presence of mental health problems, though not directly related to recidivism pose a challenge in the delivery of service targeted at criminogenic needs (McCormick et al., 2017), and as such, it has been conceptualized as a responsivity factor. Thus, addressing mental health needs could sufficiently stabilize an individual so that they can participate fully in treatment aimed at reducing criminogenic risk (McCormick et al., 2017). Suffice it to say that there is sufficient evidence that mental health cannot be ignored and must be addressed, whether as a targeted risk factor or through specific responsivity.

*Consideration for variables as interconnected, rather than isolated effects is warranted.* Within the current study, the validation sought to identify important risk and strength domains in the prediction of recidivism in isolation of one another. As a result, it is plausible that validating an instrument in such a way will fail to find significance of variables that are important in relation to one another, such as substance abuse and mental health (Bloom et al., 2003; Brennan et al., 2008; Chesney-Lind & Shelden, 2004; Johansson & Kempf-Leonard, 2009; McClellan et al., 1997; Salisbury & Van Voorhis, 2009). Further research into the interconnectedness of constructs such as

mental health, substance use, and victimization as they are experienced could speak to their importance as hypothesized in the literature, even as direct or indirect effects, and would make a significant contribution to the field.

### **Implications for Practice**

**Is there a need for separate assessments for males and females or can assessments be adjusted to ensure relevance for males and females?** The results of this study provide some evidence for gender saliency in the prediction of recidivism for males and females at the domain level. For example, the two risk domains that emerged consistently as predictive for recidivism, particularly for violent recidivism and across assessment instruments (YASI/YASI-GI and YLS/CMI) among females were attitudes and peers; the results for peers and attitudes were not consistent between general and violent recidivism. There were also results to support gender neutrality of many of the domains. Importantly, definitive conclusions regarding gender neutrality, gender saliency, and gender specificity were not possible in this study because many of the confidence intervals for males and females overlapped. It was beyond the scope of this study to examine gender differences at the level of the individual indicators, however some have found evidence that there are important differences in how these constructs are operationalized for males and females. There is ample research demonstrating the relationship between antisocial peers and recidivism among males (Bonta & Andrews, 2017; Olver et al., 2014), however research has also demonstrated the importance of criminal romantic partners and recidivism among female offenders (Becker & McCorkel, 2011; Benda, 2005; Jones, 2008; Kerig & Schindler, 2013). Together, the results of this study found some evidence to support that gender differences exist in the prediction of

recidivism that need to be considered beyond specific responsivity. From the results of this study, there does not appear to be evidence in support of developing and implementing a risk assessment model specific for females. Rather, an assessment such as the original YASI is predicting well for both males and females. When it comes to the assessment of strengths, perhaps some further fine tuning is required and validation on larger samples is justified. Most importantly further research is required to explore gender differences at the level of the individual indicators for more conclusive statements on where attention to gender differences is warranted and where assumptions of similarities are justified.

**Addressing strengths in practice.** The results presented herein support the inclusion of strengths in estimating risk among justice-involved youth. For the males in particular, a number of the strengths domains were significantly related to success (i.e., no recidivism) including family, peers, attitudes, skills, employment, and violence and aggression. Though the results for the incremental predictive validity of strength factors were inconclusive, the fact that strengths were significantly associated with the outcome warrants their consideration for case management and planning purposes, possibly as promotive effects. Appropriately identifying strength factors that have a negative relationship with the outcome of interest (i.e., recidivism) justifies their consideration in developing effective case management strategies. That said, more research is necessary to determine the strength factors that are going to have the greatest influence on reducing recidivism, which includes further refinement in the conceptualization and operationalization of these constructs, particularly for females.

**Complexity of the YASI model and variance in predictive accuracy.** The YASI is a complex model of empirically derived risk and strength factors to inform risk assessment and case management practice. In practice, special software is designed for user input on key areas of risk and strength that outputs a case management strategy using a visual graphical interface that allows for reassessment and monitoring of case progress (Orbis Partners, n.d.a.). As such, the determinations of risk and strength factors as low, moderate, and high are determined via complex algorithms designed within the software and based on jurisdictional policies. In comparison, this study made use of a simple summation score in the analyses.

Reported *AUCs* from versions of the YASI implemented into practice range in predictive ability from .62 to .82. For instance, in 2011, Jones measured the predictive validity of the YASI using a sample of probationers from New York and reported an  $AUC = .62$  for males and  $AUC = .63$  for males in the prediction of convictions within 2 years. She also reported that a gender informed version of the tool was able to predict convictions for females with an  $AUC = .67$ . Using a sample of community-based youth in Alberta, Jones (2013) also demonstrated high predictive validity with the YASI reporting an  $AUC = .82$  with the overall sample. Finally, a validation study conducted with youth probationers in New York and Illinois, reports an  $AUC = .65$  for general recidivism and  $AUC = .64$  in the prediction of conviction within 12 months (Orbis Partners, 2007a). Importantly, the results of this research represent the first independent validation of the YASI, that is researcher driven, rather than operationally driven (and conducted by the tool developers). The results of this study reported *AUC* values within the middle of the range reported for validation results to date. In particular, relative to past research, higher

*AUC* values are reported for the males for general recidivism (both pre-Screen and full assessment for the YASI and YASI-GI assessments) and higher *AUC* values for the females for violent recidivism (both pre-screen and full Assessment with the YASI and YASI-GI assessments).

Between the two models, YASI and YASI-GI there was also some variability in the *AUC* values between the two models. As demonstrated, the original YASI pre-screen total risk score had slightly higher values of *AUC* for the males and the YASI-GI pre-screen total risk score had slightly higher values of *AUC* for the girls. This was an expected finding. These results however did not translate to the full assessments, where the findings of the original YASI total risk score had higher *AUC* values than the YASI-GI full assessment total risk score. As previously discussed, one possible suggestion for this finding is that the YASI, in its original form is gender-informed. With the inclusion of mental health and victimization variables, as well as items embedded in the substance abuse, and community and peers domains that form part of the original model, it is entirely possible that the additional items added to the YASI-GI were not capturing anything beyond the items in the original YASI model. More likely, as expressed by others in the field (Daly, 1992; Daly & Chesney-Lind, 1998; Dehart, 2008; Gilfus, 1992; Hannah-Moffat, 2010; Ritchie, 1996; Simpson et al., 2008; Van Voorhis, 2012) the gender responsive items must be better conceptualized so that can capture the unique differences between genders. It is possible that some of the gender responsive items such as criminal romantic partners or relationship dysfunction are not adequately captured in the items as they are defined and measured in the YASI-GI and are worthy of further investigation to ensure relevance to the female experience.

### **Limitations**

**Small boutique<sup>32</sup> sample.** The sample size for this study is relatively small and may not be representative of all justice-involved youth. Despite the calculated scores on the YLS/CMI which indicated a moderate risk group, the youth in this sample recidivated at high rates – 57.5 % generally and 40.9% violently, suggesting this may be a high risk sample of justice-involved youth and as a result variance would be restricted. Despite this, the sample was sufficiently large to enable an investigation of gender differences on risk and strength factors and contribute to the field overall.

**Characteristics of sample and reliability.** Given that half of the male youth in this sample were on remand, the research assistants reported that these youth were less willing to talk and share important case information. The females on the other hand were more willing to openly engage in the interview process (S. Brown, personal communication). As such, the limited information provided by the males may have impacted the consistency and reliability of scoring the risk assessment instruments, particularly for the males.

### **Future Directions**

**Analyses at the individual level.** As described, the YASI-GI incorporates additional gender informed items into the domains to reflect some of the unique experiences and expression of these variables from a gender responsive perspective. As demonstrated through the various measures of predictive validity, the YASI-GI was

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<sup>32</sup> Boutique refers to a sample that is smaller in size but rich in data from a variety of sources including qualitative interviews, specialized risk measures, and questionnaires, not typically found in larger studies.

deemed a valid assessment of risk for males and females, however above and beyond the original YASI, the YASI-GI did not produce greater estimates of predictive accuracy of general and violent recidivism outcome. Although the results of this study do not demonstrate overwhelming evidence in favour of adopting the gender-informed version of the YASI-GI, further empirical work to fine tune the YASI-GI to ensure the items are capturing the essence of experiences for both male and female justice-involved youth would be an important next step. Further validation work at the individual indicator level, would contribute to more definitive conclusions on which gender informed items are contributing the most value to predictive accuracy and which could be removed as superfluous.

**How best to combine risk and strength factors into a prediction model.** One method of combining risk and strengths factors in the evaluation of risk is through simple summation. In this study, the total YASI/YASI-GI risk scores were calculated by subtracting the total strength score from the total risk score. A similar approach to combining risk and strength was undertaken by Baglivio, Wolff, Piquero, Howell, and Greenwald (2017). Referred to as the buffer concept, the idea is to obtain an estimate of the relative exposure of one type of factor (i.e., risk) over the other (i.e., strength; Baglivio et al., 2017). As these two constructs (risk and strength) are often studied in isolation, Baglivio et al. (2017) argue that it is necessary to start to combine these two constructs to obtain better estimates of risk. As demonstrated from this study, the YASI/YASI-GI total adjusted risk score obtained from this approach was able to distinguish between recidivists and non recidivists with moderate predictive accuracy (discrimination) and was well calibrated (observed through the linear relationship

between the YASI/YASI-GI total adjusted risk score and observed recidivism). How best to incorporate risk and strengths into risk assessment however, requires further conceptualization and investigation.

Based on the findings of this study, more research on strengths and their influence on risk factors is clearly warranted. In the original conceptualization of the YASI model, the strength factors are termed protective – static protective, dynamic protective, and total protective scores. The results of this study did not find conclusive evidence in support of conceptualizing strengths as protective (possibly due to issues of low power) however, the inverse relationship between strengths and success (i.e., no recidivism) do support the construct of strengths as promotive (Farrington, 2003; Loeber et al., 2007; Van der Put et al., 2011). Further research should be conducted to: a) determine the validity of the identified strengths components of the YASI at the individual level, and b) operationalize their properties as buffers or the inverse of risk.

**Importance of static vs. dynamic risk in assessment treatment.** As discussed by Taxman and Caudy (2015) there is an important distinction between static risk and dynamic risk – static risk can provide an estimate of the risk of an individual, but does not provide an indication of the factors that need to be targeted in treatment. Specifically, they argue that static risk, though useful for identifying individuals who require more intensive treatment and control, have limited utility in identifying which areas should be targeted as priorities for intervention. As such, they argue that increased attention should be placed on how best to combine both static and dynamic risk. Interestingly from the results of this study, many of the static totals (at the domain level) were not significantly predictive of general or violent recidivism for either the males or the females, however

the dynamic subdomains were. More research is needed on these dimensions separately to understand their relative contribution including the complexity of dynamic needs and the interactions between them to ensure the right combinations of risks are combined to maximize predictive accuracy while providing effective treatment targets for intervention.

**Adjusting risk assessment using appropriate weights.** As the goal of this study was to conduct an evaluation based on simple (linear) scoring of the YASI items, further research examining the applicability of weights to the items to maximize predictive accuracy would be a logical next step (and is currently being developed and tested by Orbis Partners). As demonstrated, using simple scoring the YASI models demonstrated moderate predictive accuracy with this sample, however evaluating the accuracy of the models with greater emphasis on important variables based on gender differences could have the effect of increasing predictive accuracy of the models particularly for males versus females.

### **Chapter Summary**

Using a boutique sample of justice-involved youth, this study provides validation results for the gender informed risk assessment, the Youth Assessment and Screening Instrument. Two models of the YASI were compared – the YASI as originally conceptualized and a gender informed version of the YASI (YASI-GI) with additional items tapping into the gender responsive domains included. Overall, both models were found to be moderately predictive of general and violent recidivism for both males and females. Specifically, the overall risk domains of antisocial peers and antisocial attitudes emerged as significantly predictive of violent recidivism for the females; for males

antisocial peers and attitudes were predictive for general recidivism. This could be a statistical artifact of the nature of the sample – as discussed, the sample of young females included in the sample could potentially represent a non-representative group of high risk youth, based on the high base rate of recidivism or the emergence of antisocial peers and attitudes could be reflective of true gender differences. For the males, many of the domains posited by gender neutral scholars emerged as significantly predictive, particularly for general recidivism – criminal history, family history, substance use, antisocial attitudes, education, social networks, and violence and aggression.

In conclusion, this research provided evidence for the successful merging of a gender neutral and gender responsive approach to create a gender informed risk assessment tool. Taken together, the results suggest that the *Central Eight* global risk factors are important predictors of general and violent recidivism for both males and females. Although the inclusion of gender responsive items in the YASI-GI assessment did not emerge as superior in the prediction of general and violent recidivism among females as expected there were a number of arguably already gender responsive items in the YASI that could have contributed to these results. The results of this study were able to demonstrate that both the YASI and YASI-GI models are valid measures of risk assessment for male and female justice-involved youth, however further empirical investigation of the individual item level to ensure indicators are relevant for both males and females are included and non essential indicators are removed or reserved specifically for responsivity planning. Further research that can replicate and expand these findings on a larger sample is encouraged.

## Chapter 4: General Discussion

The over-arching impetus for this research was to identify risk and strength factors that predict criminal recidivism in both male and female justice-involved youth. This was accomplished vis-à-vis two approaches. First, a meta-analytic review of risk and strength factors predictive of recidivism among justice-involved male and female youth was conducted. Second, a prospective validation study of a gender informed risk assessment tool—the Youth Assessment and Screening Instrument (Orbis Partners, 2000, 2011) was conducted on a sample of 254 justice involved youth in Central and Eastern Ontario. It was expected that while certain risk factors would predict general and violent recidivism to the same degree in both genders, there would be discernable gender differences in some areas. In sum, the study hypotheses were generally supported with some unexpected findings.

### Summary of Findings and Contributions Made to the Field in General

**Meta-analytic review of risk and strength factors among justice-involved youth.** Overall, the results from the meta-analysis of risk and strength factors among justice-involved youth presented in Chapter 2 made some interesting determinations about gender neutrality (i.e., equally predictive for both males and females), gender saliency (i.e., predictive for both males and females, but larger in magnitude for one gender over the other), and gender specificity (i.e., predictive for one gender and not the other), as delineated by Brown and Motiuk (2008).

First, at the domain level evidence was found in support of the *Central Eight* (Bonta & Andrews, 2017) predictors of risk. For the prediction of general recidivism, the domains of problematic family circumstances, education/school concerns, employment

problems, substance abuse, poor use of leisure/recreation time, antisocial personality/behaviour, antisocial attitudes/orientation were predictive for both males and females. Importantly, there were no significant differences in the magnitude of these effects between the males and females; thus, suggesting that at the aggregate level the overall domains could be classified as gender neutral predictors of recidivism (i.e., they predict equally well for both males and females). One notable exception is worthy of mention here – the results for the criminal history domain were not significant for females and as such was determined to be male specific, based on the results of the random effects model.

As hypothesized, evidence for gender saliency and/or gender specificity emerged at the individual indicator level (i.e., when subcomponents of the global domains were broken down and examined individually). Importantly, conclusions regarding the gender neutrality, gender saliency, and gender specificity of risk factors at the indicator level are tentative as there are so few studies that have examined these factors at the indicator level disaggregated by gender; the number of studies contributing an effect for these indicators ranged from three to six. As demonstrated in Table 43, there were a total of 37 individual indicators that were examined in the meta-analysis. Of these, only 16% of the indicators emerged as either female salient or female specific. Most of the indicators emerged as male salient/specific (27%) or gender neutral (32%). Further some of the gender differences that did emerge (i.e., number of prior convictions for females) do not have a priori evidence in support of the findings thus, it is not possible to attribute definitive conclusions regarding the relevance and significance. The results at the indicator level are more exploratory in nature and further research as to substantiate the findings.

Table 43

*Overview of Meta-Analytic Review Findings of Gender Saliency and Gender Specificity at the Level of the Individual Indicators*

| <i>Domain</i>                                   | Gender Neutral | Male Salient | Male Specific | Female Salient | Female Specific | Not significant |
|---|----------------|--------------|---------------|----------------|-----------------|-----------------|
| <i>Criminal history</i>                         |                |              |               |                |                 |                 |
| Prior convictions or arrests                    | ✓              |              |               |                |                 |                 |
| Failure to comply                               | ✓              |              |               |                |                 |                 |
| Prior probation or comm. supervision            |                |              | ✓             |                |                 |                 |
| Prior custody                                   | ✓              |              |               |                |                 |                 |
| Number of convictions                           |                |              |               | ✓              |                 |                 |
| Prior violence (offences, arrests)              |                |              |               |                |                 | ✓               |
| Prior weapons (offence, arrests)                |                |              |               |                |                 | ✓               |
| <i>Problematic family circ. &amp; parenting</i> |                |              |               |                |                 |                 |
| Inadequate supervision                          |                |              | ✓             |                |                 |                 |
| Difficulty controlling behaviour                | ✓              |              |               |                |                 |                 |
| Inappropriate discipline                        | ✓              |              |               |                |                 |                 |
| Inconsistent parenting                          |                |              | ✓             |                |                 |                 |
| Family substance abuse                          |                |              |               | ✓              |                 |                 |
| Family criminal history                         |                |              |               |                |                 | ✓               |
| <i>Education/employment</i>                     |                |              |               |                |                 |                 |
| Low (academic) achievement                      | ✓              |              |               |                |                 |                 |

RISK AND STRENGTHS IN YOUTH RECIDIVISM

| <i>Domain</i>                                | Gender Neutral | Male Salient | Male Specific | Female Salient | Female Specific | Not significant |
|--|----------------|--------------|---------------|----------------|-----------------|-----------------|
| Truancy at school                            |                |              |               |                | ✓               |                 |
| Current school problems                      |                |              | ✓             |                |                 |                 |
| Unemployed/ not seeking employment           |                |              |               |                |                 | ✓               |
| <i>Antisocial peer relations</i>             |                |              |               |                |                 |                 |
| Delinquent influences                        |                |              | ✓             |                |                 |                 |
| Gang affiliated/ involved                    |                |              | ✓             |                |                 |                 |
| <i>Substance abuse</i>                       |                |              |               |                |                 |                 |
| Chronic drug use                             |                | ✓            |               |                |                 |                 |
| Chronic alcohol use                          |                |              |               | ✓              |                 |                 |
| <i>Poor use leisure/recreation</i>           |                |              |               |                |                 |                 |
| Limited organ. activities                    |                |              |               |                |                 | ✓               |
| Could make better use of leisure time        |                |              | ✓             |                |                 |                 |
| No personal interests                        |                |              |               |                |                 | ✓               |
| Physically aggressive                        |                |              | ✓             |                |                 |                 |
| Poor frustration tolerance, anger management | ✓              |              |               |                |                 |                 |
| <i>Antisocial attitudes/orientation</i>      |                |              |               |                |                 |                 |
| Antisocial attitudes                         |                |              | ✓             |                |                 |                 |
| Defies authority                             | ✓              |              |               |                |                 |                 |

| <i>Domain</i>                                      | Gender Neutral | Male Salient | Male Specific | Female Salient | Female Specific | Not significant |
|--|----------------|--------------|---------------|----------------|-----------------|-----------------|
| Callous, little concern for others, no/low empathy |                |              |               |                | ✓               |                 |
| Aggressive attitudes                               | ✓              |              |               |                |                 |                 |
| <i>Child abuse</i>                                 |                |              |               |                |                 |                 |
| Maltreatment/neglect                               | ✓              |              |               |                |                 |                 |
| Sexual abuse                                       |                |              |               |                |                 | ✓               |
| Physical abuse                                     | ✓              |              |               |                |                 |                 |
| <i>Other adversity</i>                             |                |              |               |                |                 |                 |
| Living arrangements                                |                |              |               |                |                 | ✓               |
| History of runaway                                 | ✓              |              |               |                |                 |                 |
| Out of home placements                             |                |              |               |                | ✓               |                 |
| Suicidality  |                |              |               |                |                 | ✓               |

*Note:* Gender neutral = equally predictive for both males and females. Gender salient = significantly predictive for both males and females, however the magnitude of the effect is larger for one gender over the other. Gender specific = significantly predictive for one gender over the other.

Although the results in Table 43 must be interpreted cautiously given the small number of studies and corresponding number of effect sizes examined at the indicator level the results nonetheless illustrate that gender differences do exist—differences can be uncovered when the domain levels are broken down into the individual indicators and explored for significance from within. Thus, moving forward future researchers must not only unpack their findings at the indicator level but they must also operationalize global risk categories in a gender informed manner to fully discern if true gender differences exist and ultimately provide fully gender informed services. Stated differently, more theoretically-informed, primary research is needed at the indicator level, broken down by gender to further develop the results demonstrated herein. This kind of gender informed work will ultimately lead to assessment tools that are at least contextualized and deal with the criticisms levied by several gender responsive scholars who claim that a failure to take gender difference into account decontextualize the female experience (Hannah-Moffatt, 2010), narrowly define risk factors in relation to males (Daly & Chesney-Lind, 1988), and ignore heterogeneity that exists both between gender and within gender (Daly, 1992; Van Voorhis, 2012).

Of the 22 studies included in the meta-analysis, a total of 6 reported information on strength factors although, only at the domain level. Given the relative infancy of strengths in our field, the literature has not yet achieved the level of saturation seen with research on risk factors. Nonetheless, the meta-analytic findings revealed the following: family relationships and support, extra-curricular activities, personality, and rejection or absence of substance use did not emerge as significant predictors of success for either gender, albeit personality was pretty close for girls. Further, prosocial peer relations

predicted equally well for both genders (i.e., gender neutral). However, prosocial values and attitudes emerged as female salient (i.e., predictive for both males and females but larger effect for females) and education and employment opportunities emerged as male specific (i.e., predictive for males only). It is difficult to speculate on these findings as much more primary research is needed on strengths factors, particularly at the indicator level to achieve a better understanding of how the constructs are related to positive outcomes (i.e., no recidivism), however it is interesting education/employment opportunities would emerge as specific for males and not significant for females.

From a systematic review of the literature on desistance among female offenders Rodermond, Kruttschnitt, Slotboom, and Bijleveld (2016) found that more often employment is listed as a beneficial aspect in desistance from crime among males than females, however they did find evidence that employment was also important for females as well. Cauffman, Fine, Thomas, and Monahan (2017) also found evidence for employment as an important factor in the desistance process. Importantly, Rodermond et al. (2016) claim that the influence of employment should not be overlooked. It is always possible that despite the advances made for gender equality there still exist pervasive gender stereotypes that view employment and education as less significant in the lives as females. Further research into the influence of education and employment for females as well as males should be conducted to assist in debunking gender stereotypes and provide more support for the importance of education and employment for both genders.

This study illustrated that there is some evidence that strengths can predict success (i.e., no recidivism outcomes) and that there is a need to make considerations for gender. The importance of strengths in assessment and case planning cannot be

overstated – as stated by Farrington (2013), focusing on strengths and resources within individuals at risk for criminal behaviour is both more positive and more optimistic, and therefore most acceptable to the client and the community. From their validation of the Strengths Assessment Inventory for Youth (SAI-Y), Royer-Gagnier, Skilling, Brown, Moore, and Rawana (2015) highlight the benefit of assessing strengths among youth as an opportunity for case management professionals to ground treatment in areas of strength and as a measure of self-report, completion of an assessment such as the SAI-Y will remind the clients of their strengths through self-identification of their personal strengths. To inform this perspective, more evidence-based primary research is greatly needed to move the field forward from a deficits-based model to a strengths-based one. It is only through more primary research that breaks results out at the indicator level and by gender that strengths-based models can be substantiated.

**Empirical validation of a gender-informed risk assessment tool (YASI).**

Merging two theoretical perspectives, the gender neutral and gender responsive frameworks, a gender informed risk assessment for youth that incorporates risk and strengths factors was developed by Orbis Partners (2011). The purpose of the second study discussed in Chapter 3 was to empirically validate the original YASI assessment tool (Orbis Partners, 2000), and compare it to a gender informed version (YASI-GI; 2011). Recall that the YASI-GI differed from the YASI original in that it included additional items within the family history, education, social networks, substance use, mental health, attitudes, social/cognitive skills, employment and free time, and violence and aggression domains of the full assessment that were hypothesized by Orbis Partners to be more important for females. Validating a tool that can assess risk as well as strength

factors and signal important targets for interventions strategies is an important and needed contribution for work with youth, particularly with females. Additionally, the use of a male comparison group in the sample used for this research is an important strength of this empirical approach and addresses the limitations expressed by scholars in response to the gender responsive approach (Blanchette & Brown, 2006; Odgers et al., 2007). As well, the validation is the only one conducted to date that examines the validity of the full assessment as the focus of validations by the scale developers focus on the pre-screen model only. The validation study was conducted with a sample of 254 justice-involved youth (106 females and 148 males) as part of a larger Gendered Pathways from central and eastern Ontario.

Overall, the YASI and YASI-GI were found to be valid measures for both males and females with good discrimination and calibration. The overall predictive accuracy of both models (YASI and YASI-GI) in both formats (Pre-Screen and Full Assessment) was found to be moderately predictive ( $.63 < AUC < .71$ ) of general recidivism and violent recidivism, consistent with previous empirical work that has been conducted by the scale developers ref). Interrater reliability for the YASI and YASI-GI total scores (pre-screen and full assessment) were either good or excellent. Interestingly, within this sample, slightly higher predictive accuracy was found for the males for general recidivism in comparison to the females; conversely slightly higher predictive accuracy was reported for females for violent recidivism for both the pre-screen and full assessment formats. As previously discussed the difference in predictive accuracy across gender and recidivism type could be a function of the sample. More specifically, the profile of the justice-involved youth included in this study was a higher risk group, evidenced by their high

rates of general (57.5%) and violent (40.9%) recidivism. In particular, the females had high base rate for general (45.3%) and violent recidivism (28.3%).

At the domain level, many of the risk domains that align with the *Central Eight* (Bonta & Andrews, 2017) were significantly predictive for males for both general and violent recidivism, as expected (Brown et al., 2017; Gendreau, Goggin, & Smith, 2002; Olver et al., 2009; Olver et al., 2014). In regards to females, the trends were not as strong – only two of the ten domains were consistently predictive for females, the social networks and attitudes domain, particularly with violent recidivism – social networks and violent recidivism  $AUC = .76$  (original YASI full assessment) and  $AUC = .73$  (YASI-GI full assessment) and attitudes ( $AUC = .65$  for both YASI and YASI-GI full assessment).

Overall, slightly higher values of  $AUC$  were reported for the original YASI model (pre-screen and full assessment) total scores contrary to what was expected suggesting that: a) the additional gender informed items that were added to the model were not contributing to the overall assessment and with further testing it may be determined that these should be removed as non-contributory items, b) the original YASI model is already gender informed given the inclusion of some items highlighted by the gender responsive literature (i.e., mental health, victimization), and/or c) the individual items that were included in the YASI are not capturing the essence of the experiences and expression of the uniqueness attributed to gender, as posited by the gender responsive perspective (Salisbury, 2016; Steffensmeier & Allen, 1996).

Regarding the strengths component of the YASI and YASI-GI, most of the hypotheses were only partially supported or the results were inconclusive. Specifically, the addition of the total strength score from the pre-screen and full assessment YASI and

YASI-GI did not significantly contribute to the prediction of general or violent recidivism when added in a prediction model with total risk score. At the bivariate level, there were more strength domains that emerged as significantly predictive for males than females – for the males and general recidivism all of the strength domains emerged as significant with the exception of education. For females only three strength domains (out of nine) emerged as significantly predictive for general recidivism – social networks, attitudes, and employment. Contrary to what was expected, there was no specificity or saliency for strengths for females at the domain level – the family history, social networks, and social/cognitive skills domains were predictive for both males and females and did not emerge as gender salient as hypothesized. Together the results of the domain level analysis suggest that domains as strengths may need to be further refined. These results need to be interpreted with caution as the possibility exists that there was not sufficient power to detect significant effects. Further research is warranted with respect to strengths particularly given some of the models measuring the incremental validity of strengths approached significance for males. The inverse relationship demonstrated at the bivariate analysis at the domain level do provide evidence for the conjecture of strengths as promotive, as hypothesized.

In summary, as hypothesized the validity of the YASI and YASI-GI assessment were demonstrated through good discriminate validity at the global and domain level of both risk and strength components of the YASI models, good calibration with general and violent recidivism demonstrated through the observed linear relationships of predicted probability of recidivism and total scale score plots, and good convergent validity with other established risk assessment instruments demonstrated with large correlations with

YLS/CMI and PCL:YV total scores and domain scores.

### **Implications for Theory**

**Evidence for gender informed theory of crime.** As discussed in Chapter 1, a gender informed theory of crime is one that incorporates elements of both a gender neutral perspective and a gender responsive perspective. The primary goal from a gender informed approach is twofold. First, the purpose is to understand the similarities in risk factors between males and females, but importantly it is about understanding that the context and experience of the factors could be very different, including the interconnection of mental health, substance abuse, relationship dysfunction, and re-victimization. Second, in addition to addressing recidivism risk, the gender informed approach is simultaneously concerned with strengthening positive relationships and enhancing well-being and empowerment (Hannah-Moffatt, 2009; Van Voorhis, 2012) for improved quality of life. So collectively this research supports an integrative gender informed approach.

### **Limitations**

The primary strength of both of the studies conducted herein is the inclusion of a male comparison group in both the meta-analytic approach as well as the validation study, to enable gender comparisons and conclusions regarding gender saliency and gender specificity to be drawn. However, there are some noteworthy limitations for both these studies. More specifically, in both studies, a small numbers of female offenders was noted as a pervasive problem for generating statistically significant findings. With respect to the meta-analysis, many of the effect sizes were generated on a small number of studies, which can be unstable and too imprecise for concrete aggregation of data, thus,

limiting the conclusions that can be drawn and how far beyond the individual study the results can be generalized. Importantly, it is very challenging to truly test for gender specificity that really taps into gender responsive constructs from the work that currently exists, as it is primarily conceptualized around models posited from a gender neutral perspective. For the empirical validation, the sample size was relatively small and as discussed may not be representative of all justice-involved youth. Specifically, the sample used in the validation study was a group of relatively serious youth, many of which were in secure custody and thus not necessarily representative of justice-involved youth more generally. The central theme with respect to limitations of both studies call for more primary research to extend the results for more definitive conclusions. In particular, primary research studies need to include a sufficient number of females for meaningful analysis and be disaggregated by gender so important conclusions regarding gender differences be made, particularly with respect to evidence for gender neutrality, gender saliency, and gender specificity.

### **Implications for Practice**

As discussed, important factors from both the gender neutral and the gender responsive camps were successfully merged into a gender informed risk assessment, this means that building a model completely from the ground up is not necessary – there is no need to reinvent the wheel. Existing models can be modified to ensure they are gender relevant as evidenced by the successful merger of the gender neutral and gender responsive approach. In other words, a risk assessment tool that includes the well-established gender neutral factors (framed around the *Central Eight*) and gender responsive variables that has been demonstrated to work in the prediction of recidivism

for both males and females, further support a gender-informed theory of crime. These findings are consistent with the work of Van Voorhis and colleagues with the development of the WRNA trailer, that is designed as a supplement to existing risk assessment tools such as the Level of Service Instruments (LSI). As discussed, the WRNA is designed to include consideration of issues of importance to women offenders including: trauma, victimization and abuse, mental health, intimate relationships, self-esteem, self-efficacy, and parental stress, in addition to the collateral needs of housing safety and poverty (Van Voorhis et al., 2008). The development of the WRNA shows promising results for the prediction of recidivism and identification of important treatment needs for female offenders that comprises elements of a gender neutral and a gender responsive approach (Van Voorhis et al., 2013). With respect to the models tested, this study provides evidence that support the ongoing work by Orbis Partners on the weighting and refinement of certain gender responsive items and the continued use of the YASI models in practice

Further, as Taxman and Caudy (2015) have signaled, there is a need to place greater emphasis on identifying what factors need to be targeted for effective intervention with youth. Knowing a statistical estimate of risk is important in making security placement decisions and for targeting those in most need of intensive services (i.e., based on the principle of risk; Bonta & Andrews, 2017), however factors determined important in the equation of probabilities of risk are not necessarily able to assist in identifying treatment targets (Taxman & Caudy, 2015). As researchers, the goal is most often one of generating models that maximize predictive accuracy, but how useful are these models if we have achieved maximum predictive accuracy that has little utility in practice? The

research shows a clear picture of risk factors that assist in the identification of those most likely at risk of negative outcomes, but more work is needed. Moving forward more research is needed at the indicator level but for now it will be important to keep assessing gender responsive constructs and minimally deal with it in programming – by addressing factors from a strength model rather than actively incorporating gender responsive factors into risk tools without more empirical evidence to substantiate their conceptualization and their relevance. Importantly, we do not want to penalize women and girls for things such as mental health problems whereby they are placed in higher security than warranted. The YASI model has the capability to incorporate risk and strength factors (and does) however further empirical work is needed to establish how change in domains over time impacts outcome.

Further, simply because something is not predictive by traditional research standards does not mean that it should be ignored in real-world settings. Gender responsive advocates claim that it is necessary to remove barriers that may impede on work with women and girls – provide access to child care, mental health treatment at the same time – referred to as holistic treatment (Bloom et al., 2003; Covington & Bloom, 2000; Hannah-Moffat, 2009; Van Voorhis, 2012). In practice, service providers have an obligation to provide appropriate intervention based on the cases before them. That this work has identified the prevalence of factors such as victimization, mental health, dysfunctional relationships among offenders, particularly among females, cannot be ignored. Particularly if the area of concern is impeding the ability of the individual to fully engage in other intervention efforts that more directly targets criminogenic needs then it cannot be overlooked (McCormick et al., 2017). Even if addressed as a

responsivity factor, the importance of these needs cannot be understated in the establishment of the overall goal that should be one of personal growth and well-being for improved quality of life, in addition to the fundamental goal of reduced recidivism on which corrections is primarily based.

### **Future Direction**

**Need for primary research.** As stated in the conclusion of both research studies, there is an absolute need for more primary research on risk and strengths disaggregated by gender. From the meta-analysis, more empirical research that can be added to the aggregate estimates of the risk and strength factors measured to predict recidivism will contribute to more precise estimates and allow for more definitive conclusions and confidence in the findings (i.e., smaller confidence intervals). The same can be said with respect to the validation study. Further research into the YASI model that dissects the domains at the indicator level will provide more knowledge on the constructs being measured as well as definitional considerations that need to be made to ensure they are sufficiently capturing a gendered experience. Further research is needed at the item level to flesh out the most significant indicators to maximize predictive accuracy by gender. As well, differential weighting that can be applied to individual items and domains to further improve precision of accuracy for both males and females is worthwhile and is currently being explored by the scale developers.

Despite the stated limitations with both research studies, a significant contribution was made to better understanding gender differences in risk and strength factors associated with recidivism outcome, as well as the validity of a gender informed risk assessment model that successfully integrated what appear to be too opposing and at

times conflictual perspectives. Overall, the results support the validity of the YASI model in the prediction of both general and violent recidivism of justice-involved male and female youth. Though further empirical research that replicates these results would provide additional confidence in the findings presented herein, this study has found evidence in support of the successful merging of the gender neutral and gender responsive perspectives into a gender informed approach.

In conclusion, it is hoped that the findings from this research will be carried forward to continue the momentum that has been gained in the work with women and girls. Traditionally females have been afforded an inferior status compared to their male counterparts. It is encouraging that this is becoming less and less the norm. There is a great deal of work ahead before the treatment of women and girls within corrections is equal to that of males, but fortunately the gap is closing.

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**Appendix A: Meta-Analysis Coding Sheets**

|                          |
|--------------------------|
| <b>STUDY COVER SHEET</b> |
|--------------------------|

STUDY\_ID:

TITLE:

AUTHOR(S):

YEAR:

SOURCE:

NOTES:

(CODING\_DATE) Coding Date :

(dd-mmm-yyyy)

(CODED\_BY) Coded By:

## CODING SHEETS

## PART I: Study Descriptives

(STUDY\_ID)

(PUBLSHD) Is the study published (if in press, "yes"; if dissertation, "no")?

 (0) No  (1) Yes

(PUBTYPE) Type of publication:

 (1) Journal article (peer-reviewed) (2) Journal article (non-reviewed) (3) Book (4) Book chapter (5) Thesis/doctoral dissertation (6) Technical report or government report (7) Conference poster/paper (8) Other:

(PEERRVW) Was the study peer reviewed or subjected to a rigorous review process (e.g., dissertation/thesis)?

 (0) No  (1) Yes

(ADDINFO) Was additional information obtained to code the effect size?

 (0) No  (1) Yes

(COUNTRY) Study country of origin:

Scotland

Sweden

Austria

 New Zealand

Belgium

Taiwan

Switzerland

Brazil

Singapore

(PURPOSE\_R) Was the primary purpose of the study to predict recidivism?  (0) No  (1) Yes

**PART II: Sample Descriptives**

(N\_FEMALES) Total number of females?

(N\_MALES) Total number of males?

(LOCATION) Community-based or incarcerated sample?

 (0) Community     (1) Custody     (2) Mixed     (9) N/R

(TREATED) Was the sample treated?

 (0) Not treated     (1) Treated     (2) Mixed     (9) N/R

(CASE\_STATUS) What is the criminal justice status?

(0) Arrested  
 (1) Charged  
 (2) Pre-trial/detained  
 (3) Adjudicated/sentenced  
 (4) Unknown  
 (5) Pre-disposition  
 (6) Mixed

(MEAN\_AGE\_F) What is the mean age and standard deviation

(SD\_AGE\_F) of the females [2 decimal points]?

(MEAN\_AGE\_M) What is the mean age and standard deviation

(SD\_AGE\_M) of the males [2 decimal points]?

(RACE\_F) What is the ethnic breakdown of the females?

% White  
 % Black  
 % Aboriginal  
 % Hispanic  
 % Asian  
 % Multi racial  
 % Other:

(%MINORITY\_F) % of females that are an ethnic minority?

*(2 decimals)*

(RACE\_M) What is the ethnic background of the males?

% White  
 % Black  
 % Aboriginal  
 % Hispanic  
 % Asian  
 % Multi racial  
 % Other (specify):

(%MINORITY\_M) % of males that are an ethnic minority?

*(2 decimals)*

(CRIME\_TYPE\_F) Index type of crime committed for justice-involved females:

% Violent (e.g., murder/mans., rape, robbery, aggravated assault)

% Sexual

% Non-violent (e.g., property, weapons related, arson, burglary, theft)

% Drug (e.g., trafficking, possession, dui)

% Other:

(CRIME\_TYPE\_M) Index type of crime committed for justice-involved males:

% Violent (e.g., murder/mans., rape, robbery, aggravated assault)

% Sexual

% Non-violent (e.g., property, weapons related, arson, burglary, theft)

% Drug (e.g., trafficking, possession, DUI)

% Other:

(RISK\_LEVEL\_F) What is the risk level of the sample of the females?

(1) Low

(2) Moderate

(3) High

(4) Mixed

(77) Not applicable

(99) Missing/not reported

(RISK\_LEVEL\_M) What is the risk level of the sample of the males?

(1) Low

(2) Moderate

(3) High

(4) Mixed

(77) Not applicable

(99) Missing/not reported

(RISK\_LEVEL\_ALL) What is the risk level of the sample?

(1) Low

(2) Moderate

(3) High

(4) Mixed

(77) Not applicable

(99) Missing/not reported

(RISKMEAN\_F, RISKMEAN\_M, RISKMEAN\_ALL) Mean score on risk scale?

Mean (F)

Mean (M)

Mean (ALL)

(RISKSD\_F, RISKSD\_M, RISKSD\_ALL) SD on risk scale?

SD (F)

SD (M)

SD (ALL)

**PART III: Coding Effect Size**

- Study\_ID: (EFFECT\_#) Effect size # of
- (REF\_PAGE) Ref page #: (REF\_TABLE) Ref table #:
- (SUB\_SAMPLE) Is the effect size from a subgroup of a study?  (0) No  (1) Yes
- (PREDICTOR) Predictor (from coding dictionary):
- (PREDICTOR\_DESC) Brief description of predictor:
- (SCALE) Name of scale or instrument:
- (STANDARD) Is the scale/instrument standardized?  (0) No  (1) Yes  (9) N/R
- (FOLLOW\_UP) Type of follow-up?
- (1) Prospective
  - (2) Retrospective
  - (77) Not applicable (not a longitudinal study)**
  - (99) Missing/not reported
- (MEASURT) Source of information for indicator (mark all that apply):
- (1) Self-report questionnaire**
  - (2) Interview
  - (3) File review
  - (4) Other
  - (9) Unknown
- (RECIDIVISM) Type of recidivism (see coding dictionary):
- (LENGTH\_FOLLOWUP) Prospective study length of follow-up? MONTHS (77 Not applicable; 99 Missing/not reported)
- (FIX\_FOLLOW) Fixed or variable follow-up?  (1) Fixed  (2) Variable
- (ATTRITION\_GEN) Percent of sample not available at follow-up - general recidivism
- 0-25%  26-50%  51-75%  76-100%
- (ATTRITION\_VIO) Percent of sample not available at follow-up - violent recidivism
- 0-25%  26-50%  51-75%  76-100%
- (ATTRITION\_SEX) Percent of sample not available at follow-up - sexual recidivism
- 0-25%  26-50%  51-75%  76-100%

| Interval/Ordinal          | Num | Mean | SD |
|---------------------------|-----|------|----|
| Females - Recidivists     |     |      |    |
| Females - Non recidivists |     |      |    |
| <i>Total</i>              |     |      |    |

| Interval/Ordinal        | Num | Mean | SD |
|-------------------------|-----|------|----|
| Males - Recidivists     |     |      |    |
| Males - Non recidivists |     |      |    |
| <i>Total</i>            |     |      |    |

| Dichotomous indicators    | No presence (0) | Presence (1) | <i>Total</i> |
|---------------------------|-----------------|--------------|--------------|
| Females - Recidivists     |                 |              |              |
| Females - Non recidivists |                 |              |              |
| <i>Total</i>              |                 |              |              |

| Dichotomous indicators  | No presence (0) | Presence (1) | <i>Total</i> |
|-------------------------|-----------------|--------------|--------------|
| Males - Recidivists     |                 |              |              |
| Males - Non recidivists |                 |              |              |
| <i>Total</i>            |                 |              |              |

(STAT\_F) Statistic\_F:

(STAT\_M) Statistic\_M:

- |   |   |   |  |
|---|---|---|--|
| <input type="checkbox"/> (1) Raw data       | <input type="checkbox"/> (2) Freq. (2X2)  | <input type="checkbox"/> (3) Means (SD)   | <input type="checkbox"/> (4) t/F         |
| <input type="checkbox"/> (5) chi square     | <input type="checkbox"/> (6) Significance | <input type="checkbox"/> (7) r, phi, corr | <input type="checkbox"/> (8) Non-signif. |
| <input type="checkbox"/> (9) Non-sig. w/dir | <input type="checkbox"/> (10) Log. Reg.   | <input type="checkbox"/> (11) ROC areas   | <input type="checkbox"/> (12) Cox Reg    |
| <input type="checkbox"/> (13) <i>d</i>      |   |   |  |

Effect\_size\_F (Cohen's d):

Effect\_size\_M (Cohen's d):

**Appendix B. Interrater Reliability of Meta-Analysis Coding**

| Variable                      | Value labels   | Type        | %Agreement | Kappa           | ICC   |
|-------------------------------|--|-------------|------------|-----------------|-------|
| Study year                    | Year of study  | Continuous  | -          | -               | 1.000 |
| Published                     | 0=No<br>1=Yes  | Categorical | 100.0      | 1.000           | -     |
| Type of publication           | 1=Journal article (peer-reviewed)<br>5=Thesis/doctoral dissertation<br>6=Technical report or government report | Categorical | 100.0      | 1.000           | -     |
| Peer reviewed                 | 0=No<br>1=Yes  | Categorical | 90.0       | -. <sup>a</sup> | -     |
| Country                       | 0=Canada<br>1=United States<br>9=Scotland  | Categorical | 100.0      | 1.000           | -     |
| Purpose to predict recidivism | 0=No<br>1=Yes  | Categorical | 100.00     | -. <sup>a</sup> | -     |

| Variable                            | Value labels  | Type        | %Agreement                    | Kappa | ICC   |
|-------------------------------------|---|-------------|-------------------------------|-------|-------|
| Total number of females             | -   | Continuous  | -                             | -     | 0.996 |
| Total number of males               | -   | Continuous  | -                             | -     | 1.000 |
| Location                            | 0=Community<br>1=Custody<br>3=Mixed<br>9=N/R  | Categorical | 100.0                         | 1.000 | -     |
| Status of juvenile delinquency case | 0=Arrested<br>1=Charged<br>2=Pre-trial/detained<br>3=Adjudicated/sentenced<br>4=Unknown<br>5=Pre-disposition<br>6=Mixed | Categorical | 70.0                          | 0.474 | -     |
| Mean age of females                 | -   | Continuous  | -                             | -     | 1.000 |
| SD of age of females                | -   | Continuous  | Data not available in studies |       |       |
| Mean age of males                   | -   | Continuous  | -                             | -     | 1.000 |

| Variable                 | Value labels | Type       | %Agreement                    | Kappa | ICC   |
|--------------------------|--------------|------------|-------------------------------|-------|-------|
| SD of age of females     | -            | Continuous | Data not available in studies |       |       |
| % Females - White        | -            | Continuous | -                             | -     | 1.000 |
| % Females – Black        | -            | Continuous | -                             | -     | 1.000 |
| % Females – Aboriginal   | -            | Continuous | -                             | -     | 1.000 |
| % Females - Hispanic     | -            | Continuous | -                             | -     | 1.000 |
| % Females - Asian        | -            | Continuous | -                             | -     | 1.000 |
| % Females – Multi-Racial | -            | Continuous | -                             | -     | 1.000 |
| % Females - Other        | -            | Continuous | -                             | -     | 1.000 |
| % Males - White          | -            | Continuous | -                             | -     | 1.000 |
| % of minority females    | -            | Continuous | -                             | -     | 1.000 |
| % Males - White          | -            | Continuous | -                             | -     | 1.000 |

| Variable                     | Value labels | Type       | %Agreement | Kappa | ICC   |
|------------------------------|--------------|------------|------------|-------|-------|
| % Males - Black              | -            | Continuous | -          | -     | 1.000 |
| % Males – Aboriginal         | -            | Continuous | -          | -     | 1.000 |
| % Males - Hispanic           | -            | Continuous | -          | -     | 1.000 |
| % Males - Asian              | -            | Continuous | -          | -     | 1.000 |
| % Males – Multi-Racial       | -            | Continuous | -          | -     | 1.000 |
| % Males - Other              | -            | Continuous | -          | -     | 1.000 |
| % of minority males          | -            | Continuous | -          | -     | 1.000 |
| % females – violent crime    | -            | Continuous | -          | -     | 1.000 |
| % females – sexual crime     | -            | Continuous | -          | -     | 1.000 |
| % females – nonviolent crime | -            | Continuous | -          | -     | 1.000 |
| % females – drug crime       | -            | Continuous | -          | -     | 1.000 |

| Variable                    | Value labels | Type       | %Agreement | Kappa | ICC   |
|-----------------------------|--------------|------------|------------|-------|-------|
| % females – other crime     | -            | Continuous | -          | -     | 1.000 |
| % males – violent crime     | -            | Continuous | -          | -     | 1.000 |
| % males – sexual crime      | -            | Continuous | -          | -     | 1.000 |
| % males – non-violent crime | -            | Continuous | -          | -     | 1.000 |
| % males – drug crime        | -            | Continuous | -          | -     | 1.000 |
| % males – other crime       | -            | Continuous | -          | -     | 1.000 |
| Risk level of females       | -            | Continuous | 90.0       | 0.831 | -     |
| Risk level of males         | -            | Continuous | 90.0       | 0.821 | -     |
| Risk level of total sample  | -            | Continuous | 60.0       | 0.429 | -     |

| Variable                     | Value labels   | Type        | %Agreement | Kappa | ICC   |
|------------------------------|--|-------------|------------|-------|-------|
| Mean risk level females      | -  | Continuous  | -          | -     | 0.818 |
| Mean risk level males        | -  | Continuous  | -          | -     | 0.819 |
| Mean risk level total sample | -  | Continuous  | -          | -     | 1.000 |
| SD of risk level females     | -  | Continuous  | -          | -     | 0.816 |
| SD of risk level males       | -  | Continuous  | -          | -     | 0.816 |
| SD of risk level females     | -  | Continuous  | -          | -     | 1.000 |
| Total number of effects      | -  | Continuous  | -          | -     | 0.992 |
| Scale                        | 1=YLSCMI<br>2=WSJCA<br>4=YASI<br>6=SDRRC<br>8=SBARA<br>9=VRSYV | Categorical | 90.0       | 0.859 | -     |

| Variable                         | Value labels  | Type        | %Agreement | Kappa           | ICC |
|----------------------------------|---|-------------|------------|-----------------|-----|
|                                  | 99=n/a  |             |            |                 |     |
| Analysis based on sub-sample     | 0=No<br>1=Yes   | Categorical | 80.0       | -. <sup>a</sup> | -   |
| Risk scale standardized?         | 0=No<br>1=Yes   | Categorical | 80.0       | 0.583           | -   |
| Type of study                    | 1=Prospective<br>2=Retrospective<br>99=Missing/not reported | Categorical | 80.0       | 0.412           | -   |
| Type of measurement of predictor | -   | Continuous  | -          | -               |     |
| • self-report                    | 0=No<br>1=Yes   | Categorical | 100.00     | -. <sup>a</sup> | -   |
| • interview                      | 0=No<br>1=Yes   | Categorical | 90.0       | -. <sup>a</sup> | -   |
| • file review                    | 0=No<br>1=Yes   | Categorical | 70.0       | -. <sup>a</sup> | -   |
| • other                          | 0=No<br>1=Yes   | Categorical | 40.0       | -. <sup>a</sup> | -   |
| Type of recidivism               | 1=General<br>2=Violent                                      | Categorical | 100.0      | 1.000           | -   |

| Variable                                      | Value labels                | Type        | %Agreement | Kappa | ICC   |
|---|-----------------------------|-------------|------------|-------|-------|
|   | 3=Technical                 |             |            |       |       |
| Length of follow-up                           | -                           | Continuous  | -          | -     | 0.859 |
| Fixed or variable follow-up                   | 1=Fixed<br>2=Variable       | Categorical | 88.89      | 0.769 | -     |
| Predictor                                     | -see coding manual for list | Categorical | 91.95      | 0.641 |       |
| Total female recidivists                      | -                           | Continuous  | -          | -     |       |
| Total female non-recidivists                  | -                           | Continuous  | -          | -     |       |
| Mean predictor score – female recidivists     | -                           | Continuous  | -          | -     |       |
| SD predictor score – female recidivists       | -                           | Continuous  | -          | -     |       |
| Mean predictor score – female non-recidivists | -                           | Continuous  | -          | -     |       |
| SD predictor score – female non-              | -                           | Continuous  | -          | -     |       |

| Variable  | Value labels | Type       | %Agreement | Kappa | ICC   |
|---|--------------|------------|------------|-------|-------|
| recidivists                                       |              |            |            |       |       |
| Total male recidivists                            | -            | Continuous | -          | -     |       |
| Total male non-recidivists                        | -            | Continuous | -          | -     |       |
| Mean predictor score – male recidivists           | -            | Continuous | -          | -     |       |
| SD predictor score – male recidivists             | -            | Continuous | -          | -     |       |
| No presence of indicator – female recidivists     | -            | Continuous | -          | -     | 0.940 |
| Presence of indicator – female recidivists        | -            | Continuous | -          | -     | 0.911 |
| Total female recidivists                          | -            | Continuous | -          | -     | 1.000 |
| No presence of indicator – female non-recidivists | -            | Continuous | -          | -     | 0.999 |

| Variable   | Value labels                          | Type        | %Agreement | Kappa | ICC   |
|--|---------------------------------------|-------------|------------|-------|-------|
| Presence of indicator<br>– female non-<br>recidivists  | -                                     | Continuous  | -          | -     | 0.998 |
| Total female non-<br>recidivists                       | -                                     | Continuous  | -          | -     | 1.000 |
| No presence of<br>indicator – male<br>recidivists      | -                                     | Continuous  | -          | -     | 1.000 |
| Presence of indicator<br>– male recidivists            | -                                     | Continuous  | -          | -     | 0.999 |
| Total male recidivists                                 | -                                     | Continuous  | -          | -     | 1.000 |
| No presence of<br>indicator – male non-<br>recidivists | -                                     | Continuous  | -          | -     | 1.000 |
| Presence of indicator<br>– male non-<br>recidivists    | -                                     | Continuous  | -          | -     | 0.999 |
| Statistic  | 2=2x2<br>3=Means (SD)<br>5=Chi square | Categorical | 99.37      | 0.990 | -     |

| Variable | Value labels                   | Type | %Agreement | Kappa | ICC                      |
|----------|--------------------------------|------|------------|-------|--------------------------|
|          | 7=r, phi, corr<br>11=ROC areas |      |            |       |                          |
|          |                                |      |            |       | ICC n = 160 <sup>b</sup> |

Note: ICC = Absolute, two-way mixed intraclass correlation coefficient. <sup>a</sup>Kappa not calculated because at least one variable is a constant. <sup>b</sup>160 common effect sizes.

### Appendix C: Detailed Coding Example for YASI/YASI-GI

|                                   | ● ---   | ● --   | ● 0   | ● +   | ● ++  |
|-----------------------------------|---|--|---|---|---|
| <b>1. Accepts responsibility:</b> | Openly accepts or is proud of criminal behavior | Minimizes, denies, justifies, excuses or blames others | Indicates some awareness of the need to accept responsibility | Recognizes that he/she must accept responsibility | Voluntarily accepts full responsibility for criminal behavior |

As can be seen from the attitudes item above “accepts responsibility”, response categories are reflective of the degree of risk (openly accepts or is proud of criminal behaviour) or degree of strength (voluntarily accepts full responsibility for criminal behaviour) of the item. For the original YASI, the individual items within each domain are scored according to their degree of risk (as above) and then summed to create total scores. As previously indicated, the YASI has been adapted for different jurisdictions and as a result different item weights and cutoff scores are reflected of jurisdictional policy (Orbis Partners, n.d.a.). Continuing with the attitudes domain as an example, the process whereby the total domain and subdomain scores were calculated in this study is described.

For the attitudes domain, there are a total of four subdomains that are calculated (attitudes static risk, attitudes dynamic risk, attitudes static protective, and attitudes dynamic protection), in addition to the total attitudes risk and total attitudes strength. The attitudes domain is comprised of the following eight items: accepts responsibility for behaviour, understands the impact of his/her behaviour on others, willingness to make amends, optimism, attitude when engaged in delinquent/criminal acts(s), law-abiding attitudes, respect for authority figures, and readiness for change.

The first subdomain, attitudes static risk has one item – attitudes when engaged in delinquent/criminal act and was scored as: “nervous, afraid, or worried”, “uncertain or indecisive”, “unconcerned or indifferent”, “hyper, excited, stimulated”, and “confident or

brags”. Using the YASI scoring manual as a guide, the following values were assigned: “nervous, afraid, or worried” = 0, “uncertain or indecisive” = 0, “unconcerned or indifferent” = 0, “hyper, excited, stimulated” = 1, and “confident or brags” = 2. Thus, the item ranged from 0 to 2, where 0 reflects low or no risk and 2 reflects high risk on this item. Because there is only one item, this item becomes the score for the attitudes static risk subdomain (i.e., attitudes when engaged in crime = attitudes static risk subdomain).

The attitudes dynamic risk subdomain is comprised of seven items – accepts responsibility, understands impact of behaviour, willingness to make amends, optimism, law-abiding intentions, respect for authority figures, and motivation to address attitudes. As above, each individual item is recoded as 0, 1, 2 that reflects the degree of response related to risk. As well, it should be noted that the language of the middle response category was carefully considered to score each level of the response according to the influence of a risk or a need. For example, the item accepts responsibility was coded as follows: “voluntarily accepts full responsibility for criminal behaviour” = 0, “recognizes that he/she must accept responsibility” = 0, “indicates some awareness to accept responsibility” = 0, “minimizes, denies, justifies, excuses, or blames others” = 1 and “openly accepts or is proud” = 2. In this instance, the ‘middle’ category of the likert, scale, “indicates some awareness” is not reflective of a risk and so was scored as 0. The remaining items were scored in the same manner to recode into the 0, 1, 2 structure. To calculate the attitudes total dynamic risk score then, the seven recoded items scored 0-2 were summed. Thus, the total plausible range for the attitudes dynamic risk score was 0 to 14.

A similar procedure was followed for the strength items (i.e., attitudes static

protective and attitudes dynamic protective). For the static protective scale for the attitudes domain, once again there was one item – attitudes when engaged in antisocial/criminal acts. Item responses for the attitudes when engaged item were recoded as “nervous, afraid, or worried” = 2, “uncertain or indecisive” = 1, “unconcerned or indifferent” = 0, “hyper, excited, stimulated” = 0, and “confident or brags” = 0. Note that the attitudes when engaged item is the same item that was used to create the attitudes static risk subdomain, however for the static protective domain, the response items are recoded to reflect the item as a strength. Given there is only one item that comprises the attitudes static protective domain, the recoded the attitudes when engaged item became the attitudes static protective domain scored as 0-2.

Finally, the attitudes dynamic protective subdomain consisted of the following seven variables that were summed into a total score: accepts responsibility, understands impact of behaviour, willingness to make amends, optimism, law-abiding attitudes, respect for authority figures, and motivation to address attitudes risk. Once the items were recoded as 0, 1, 2, they were summed to create the subdomain score which ranged from 0 to 14.

A similar coding strategy was applied to all items in the original YASI and the relevant items for each domain and subdomain were summed to create the respective total scores. A detailed table of the items for each of the domains as well as the subdomains is provided for reference in Appendix D. The plausible range for each of the domain and subdomain totals is also broken down in the appendix.

In addition to the subdomain scores just described, total domain scores (attitudes total risk and attitudes total strength) were also calculated. To calculate the attitudes total

risk, the calculated attitudes static risk and attitudes dynamic risk were summed together. Similarly, the attitudes total strength was calculated by adding attitudes static protective and attitudes dynamic protective together. Table 19 presents the domain totals and the domain subtotals across all domains in the YASI assessment.

Next, domain totals were calculated to reflect a total risk score and a total strength score for each domain. Recall that the total risk is comprised of the static risk and the dynamic risk, so for the attitudes total risk score, attitudes static risk and attitudes dynamic risk were summed. Similarly, for the attitudes strengths total, the attitudes static protective and attitudes dynamic protective were summed. The breakdown of domain totals for all of the domains is also provided in Table 20.

Following the calculation of the domain and subdomain totals, four components of the YASI total scale were next to be calculated, summing across all domains – YASI static risk total, YASI dynamic risk total, YASI static protective total, and YASI dynamic protective total. The four components of the scale were calculated by summing the domain totals:  $\text{YASI static risk total} = \text{criminal history risk} + \text{family history static risk} + \text{school static risk} + \text{social networks static risk} + \text{mental health static risk} + \text{substance use static risk} + \text{attitudes static risk} + \text{social/cognitive skills static risk} + \text{employment and free time static risk} + \text{violence and aggression static risk}$ . The YASI dynamic risk total, YASI static protective total, and YASI dynamic protective total were similarly calculated using the relevant subdomains to create the total scores.

Finally, a YASI total risk score and a YASI total strength score for the overall YASI was calculated. The YASI total risk score was calculated by adding the YASI static risk total together with the YASI dynamic risk total. Similarly, the YASI total strength

score was calculated by summing the YASI static protective and the YASI dynamic protective scores together. An overall YASI total adjusted score was also calculated by subtracting the YASI total strength score from the YASI total risk score<sup>33</sup>.

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<sup>33</sup>Given that the consideration of strengths factors in the assessment of risk is still in its relative infancy, there is not currently a consensus on how best to combine risk and strength factors into an overall prediction estimate (Baglivio et al., 2017). One method is to subtract the total strength from the total risk, which was the approach taken in this study, as it has been done by others (Jones, 2011; Van Voorhis et al., 2008).

**Appendix D: YASI/YASI-GI Simple Scoring**

| <b>MODEL</b>            | <b>DOMAIN &amp; Item</b>                                      | <b>VALUES</b>       | <b>RECODE</b> | <b>MAX</b> |
|-------------------------|---|---------------------|---------------|------------|
| <b>CRIMINAL HISTORY</b> |   |                     |               |            |
| Y/Y-GI                  | Previous police contacts for offences                         | No<br>Yes           | 0<br>1        | 1          |
| Y/Y-GI                  | Age at first contact for an offence (num)                     | 15+<br>13-14<br><13 | 0<br>1<br>2   | 2          |
| Y/Y-GI                  | Number of police contacts (num)                               | 0-1<br>2-3<br>4+    | 0<br>1<br>2   | 2          |
| Y/Y-GI                  | Police contact for Category I offences                        | No<br>Yes           | 0<br>1        | 1          |
| Y/Y-GI                  | Number of offences processed by adult court (num)             | 0<br>1<br>2+        | 0<br>1<br>2   | 2          |
| Y/Y-GI                  | Number of weapon offences (num)                               | 0<br>1-2<br>3+      | 0<br>1<br>2   | 2          |
| Y/Y-GI                  | Police contact for offences against another person (num)      | 0-1<br>2<br>3+      | 0<br>1<br>2   | 2          |
| Y/Y-GI                  | Police contact for Category I offences against another person | No<br>Yes           | 0<br>1        | 1          |
| Y/Y-GI                  | Placements with CAS (num)                                     | 0<br>1-3<br>4+      | 0<br>1<br>2   | 2          |
| Y/Y-GI                  | Number of times admitted to remand and custody (num)          | 0<br>1-2<br>3+      | 0<br>1<br>2   | 2          |

| MODEL         | DOMAIN & Item  | VALUES                                | RECODE      | MAX  |
|---------------|--|---------------------------------------|-------------|------|
| Y/Y-GI        | Number of attempted or actual escapes (num)  | 0<br>1+                               | 0<br>1      | 1    |
| Y/Y-GI        | Failure to appear in court (num)   | 0<br>1+                               | 0<br>1      | 1    |
| Y/Y-GI        | Total number of breaches   | 0<br>1-4<br>5+                        | 0<br>1<br>2 | 2    |
| Y/Y-GI        | <b><i>Criminal history static risk (SR)</i></b><br><i>(add all items in legal history domain)</i>                    |                                       |             | 21   |
| <b>FAMILY</b> |  |                                       |             |      |
| Y/Y-GI        | Times kicked out/locked out or runaway (num)   | 0<br>1-6<br>7+                        | 0<br>1<br>2 | 2    |
| Y/Y-GI        | Has there been a family finding of child neglect   | No<br>Yes                             | 0<br>1      | 1    |
| Y/Y-GI        | Historic circumstances of family members – <i>mother, father, step-parent, sibling, other</i>                        | N.A.                                  | 0           | (4)  |
|               |  | No problems                           | 0           |      |
|               |  | Alcohol/drug problems                 | +1          |      |
|               |  | Mental health problems                | +1          |      |
|               |  | JD/criminal record                    | +1          |      |
|               |  | Violent JD /criminal record           | +1          |      |
|               | Mother+father+step-parent+sibling+other  | 0-4*6                                 |             | (24) |
|               |  | 0                                     | 0           | 2    |
|               |  | 1-2                                   | 1           |      |
|               |  | 3+                                    | 2           |      |
| Y/Y-GI        | <b><i>Family history static risk (SR)</i></b><br><i>(times kicked out + child neglect + circumstances of family)</i> |                                       |             | 5    |
| Y/Y-GI        | Compliance with parental rules   | Youth usually obeys and follows rules | 0           | 2    |

| MODEL  | DOMAIN & Item  | VALUES   | RECODE | MAX  |
|--------|--|--|--------|------|
|        |  | Youth sometimes obeys or obeys some rules      | 0      |      |
|        |  | Youth often disobeys rules (or family n/a)     | 0      |      |
|        |  | No pro-social rules in place                   | 1      |      |
|        |  | Youth consistently disobeys, and/or is hostile | 2      |      |
| Y/Y-GI | Parental/custodial supervision   | Good supervision                               | 0      | 2    |
|        |  | Some good supervision                          | 0      |      |
|        |  | Some supervision or N/A                        | 0      |      |
|        |  | Some inadequate supervision                    | 1      |      |
|        |  | Consistently inadequate supervision            | 2      |      |
| Y/Y-GI | Circumstances of family members – <i>mother, father, step-parent, sibling, other</i> | N.A.   | 0      | (6)  |
|        |  | No problems                                    | 0      |      |
|        |  | Alcohol/drug problems                          | +1     |      |
|        |  | Mental health problems                         | +2     |      |
|        |  | JD/criminal record                             | +1     |      |
|        |  | Violent JD /criminal record                    | +2     |      |
|        | Mother+father+step-parent+sibling+other  | 0-4*6  |        | (24) |
|        |  | 0  | 0      | 2    |
|        |  | 1-2  | 1      |      |
|        |  | 3+   | 2      |      |
| Y/Y-GI | Appropriate consequences for bad behaviour   | Consistently appropriate consequences          | 0      | 2    |
|        |  | Sometimes appropriate consequences             | 0      |      |
|        |  | Some consequences are used or N/A              | 0      |      |
|        |  | Usually not appropriate consequences           | 1      |      |

| MODEL  | DOMAIN & Item  | VALUES   | RECODE | MAX |
|--------|--|--|--------|-----|
|        |  | Never appropriate or no consequences   | 2      |     |
| Y/Y-GI | Appropriate rewards for good behaviour                 | Consistently appropriate rewards   | 0      | 2   |
|        |  | Sometimes appropriate rewards  | 0      |     |
|        |  | Some rewards are used or N/A   | 0      |     |
|        |  | Usually not appropriate rewards  | 1      |     |
|        |  | Never appropriate or no rewards  | 2      |     |
| Y/Y-GI | Parental attitude towards youths maladaptive behaviour | Clearly disapproves of youth's maladaptive behaviour                                     | 0      | 3   |
|        |  | Shows some disapproval of behaviour  | 0      |     |
|        |  | Minimizes, denies, justifies, excuses maladaptive behaviour, blames others/circumstances | 1      |     |
|        |  | Accepts youth's maladaptive behaviour as okay  | 2      |     |
|        |  | Proud of youth's maladaptive behaviour   | 3      |     |
| Y/Y-GI | Parental love, caring and support of youth             | Consistent love, caring, and support   | 0      | 2   |
|        |  | Inconsistent love, caring, and support   | 0      |     |
|        |  | Some caring or N/A   | 0      |     |
|        |  | Indifferent, uncaring, uninterested, unwilling to help                                   | 1      |     |
|        |  | Hostile toward youth, berating, belittling   | 2      |     |

| MODEL  | DOMAIN & Item  | VALUES  | RECODE | MAX       |
|--------|--|---|--------|-----------|
| Y/Y-GI | Level of conflict between parents, youth and parents, and among siblings   | Not applicable  | 0      | (17)      |
|        |  | No conflict   | 0      |           |
|        |  | Some conflict, well-managed                                     | +1     |           |
|        |  | Some conflict, distressing                                      | +2     |           |
|        |  | Verbal intimidation, yelling, heated arguments                  | +2     |           |
|        |  | Threats of physical violence                                    | +3     |           |
|        |  | Physical violence between parents                               | +3     |           |
|        |  | Physical violence between parents & children                    | +3     |           |
|        |  | Physical violence between sibling                               | +3     |           |
|        | Add level of conflict together   | 0   | 0      | 2         |
|        |  | 1-2   | 1      |           |
|        |  | 3+  | 2      |           |
| Y      | <b><i>Family history dynamic risk (DR)</i></b><br>(parental supervision+ circumstances of family + consequences for behaviour + appropriate rewards + parental attitudes+ parental love + level of conflict) |   |        | <b>15</b> |
| Y-GI   | Youths attachment to children  | Highly rewarding relationships                                  | 0      | 2         |
|        |  | Rewarding relationships with children                           | 0      |           |
|        |  | Minimally rewarding relationship with children (or no children) | 1      |           |
|        |  | Lacks interest or difficulty establishing attachment            | 1      |           |
|        |  | High degree of conflict or absence of attachment                | 2      |           |

| MODEL  | DOMAIN & Item  | VALUES   | RECODE | MAX |
|--------|--|--|--------|-----|
| Y-GI   | Youths parenting skills  | Confident and proficient parenting skills are evident                                      | 0      | 2   |
|        |  | Parenting skills appear adequate and non-problematic                                       | 0      |     |
|        |  | Parenting skills are not a major issue/deficit (or no children)                            | 0      |     |
|        |  | Some level of parenting skill deficit expressed or evident                                 | 1      |     |
|        |  | Low interest in parenting role or major parenting skill deficits are recognized or evident | 2      |     |
| Y-GI   | Motivation to address risk in family   | Actively committed and working on change   | 0      | 2   |
|        |  | Is cooperative or taking steps towards positive change                                     | 0      |     |
|        |  | Family not a problem – no need for change or N/A   | 0      |     |
|        |  | Recognizes need to change but not motivated to change                                      | 1      |     |
|        |  | Uncooperative or unwilling to work on positive change                                      | 2      |     |
| Y-GI   | <i>Family history dynamic risk (DR)</i><br>(parental supervision+ circumstances of family + consequences for behaviour + appropriate rewards + parental attitudes+ parental love + level of conflict + attachment to children + parenting skills + motivation to address risk) |  |        | 21  |
| Y/Y-GI | Parental/custodial supervision   | Good supervision   | 2      | 2   |
|        |  | Some good supervision  | 1      |     |
|        |  | Some supervision or N/A  | 1      |     |
|        |  | Some inadequate supervision  | 0      |     |

| MODEL  | DOMAIN & Item  | VALUES   | RECODE | MAX |
|--------|--|--|--------|-----|
|        |  | Consistently inadequate supervision            | 0      |     |
| Y/Y-GI | Appropriate consequences for bad behaviour   | Consistently appropriate consequences          | 2      | 2   |
|        |  | Sometimes appropriate consequences             | 1      |     |
|        |  | Some consequences or N/A                       | 1      |     |
|        |  | Usually not appropriate                        | 0      |     |
|        |  | Never appropriate or no consequences           | 0      |     |
| Y/Y-GI | Appropriate rewards for good behaviour   | Consistently appropriate rewards               | 2      | 2   |
|        |  | Sometimes appropriate rewards                  | 1      |     |
|        |  | Some rewards are used or N/A                   | 1      |     |
|        |  | Usually not appropriate rewards                | 0      |     |
|        |  | Never appropriate rewards                      | 0      |     |
| Y/Y-GI | Support network for family, extended family and friends who can provide additional support | Strong family support network                  | 2      | 2   |
|        |  | Some family support network                    | 1      |     |
|        |  | No family support network                      | 0      |     |
| Y/Y-GI | Family members youth feels close to or has a good relationship with                        | Mother/female caretaker                        | 1      | 1   |
|        |  | Father/male caretaker                          | 1      |     |
|        |  | Female sibling                                 | 1      |     |
|        |  | Male sibling                                   | 1      |     |
|        |  | Extended family                                | 1      |     |
|        |  | No one   | 0      |     |
| Y/Y-GI | Family provides opportunities for youth to participate in family activities                | Ongoing opportunities for involvement provided | 2      | 2   |

| MODEL  | DOMAIN & Item  | VALUES  | RECODE | MAX |
|--------|--|---|--------|-----|
|        |  | Some opportunities for involvement provided                     | 1      |     |
|        |  | No opportunities for involvement provided                       | 0      |     |
| Y/Y-GI | Family provides opportunities for youth to learn and grow and succeed  | Ongoing opportunities for growth provided                       | 2      | 2   |
|        |  | Some opportunities for growth provided                          | 1      |     |
|        |  | No opportunities for growth provided                            | 0      |     |
| Y/Y-GI | Parental love, caring and support of youth   | Consistent love, caring, and support                            | 2      | 2   |
|        |  | Inconsistent love, caring, and support                          | 1      |     |
|        |  | Some caring, and support  | 1      |     |
|        |  | Indifferent, uncaring, uninterested, unwilling to help          | 0      |     |
|        |  | Hostile toward youth, berating, belittling                      | 0      |     |
| Y      | <i>Family history dynamic protective (DP)</i><br>(parental supervision + appropriate consequences + appropriate rewards + support network + family members youth feels close to + provides opportunities activities + provides opportunities learn & grow + parental love) |   |        | 15  |
| Y-GI   | Youths attachment to children  | Highly rewarding relationships                                  | 2      | 2   |
|        |  | Rewarding relationships with children                           | 1      |     |
|        |  | Minimally rewarding relationship with children (or no children) | 0      |     |

| MODEL | DOMAIN & Item                        | VALUES   | RECODE | MAX |
|-------|--------------------------------------|--|--------|-----|
|       |                                      | Lacks interest or difficulty establishing attachment                                       | 0      |     |
|       |                                      | High degree of conflict or absence of attachment   | 0      |     |
| Y-GI  | Youths parenting skills              | Confident and proficient parenting skills are evident                                      | 2      | 2   |
|       |                                      | Parenting skills appear adequate and non-problematic                                       | 1      |     |
|       |                                      | Parenting skills are not a major issue/deficit (or no children)                            | 0      |     |
|       |                                      | Some level of parenting skill deficit expressed or evident                                 | 0      |     |
|       |                                      | Low interest in parenting role or major parenting skill deficits are recognized or evident | 0      |     |
| Y-GI  | Motivation to address risk in family | Actively committed and working on change   | 2      | 2   |
|       |                                      | Is cooperative or taking steps towards positive change                                     | 1      |     |
|       |                                      | Family not a problem – no need for change or N/A   | 0      |     |
|       |                                      | Recognizes need to change but not motivated to change                                      | 0      |     |
|       |                                      | Uncooperative or unwilling to work on positive change                                      | 0      |     |

| MODEL            | DOMAIN & Item   | VALUES                   | RECODE | MAX |
|------------------|---|--------------------------|--------|-----|
| Y-GI             | <b><i>Family history dynamic protective (DP)</i></b><br>(parental supervision + appropriate consequences + appropriate rewards + support network + family members youth feels close to + provides opportunities activities + provides opportunities learn & grow + parental love + attachment to children + parental skills + motivation to address risk) |                          |        | 21  |
| Y                | <b><i>YASI family history domain total risk</i></b><br>( <i>YASI Family history SR + YASI Family history DR</i> )   |                          |        | 20  |
| Y                | <b><i>YASI family history domain total strength</i></b><br>( <i>YASI family history DP</i> )  |                          |        | 15  |
| Y-GI             | <b><i>YASI-GI family history domain total risk</i></b><br>( <i>YASI-GI Family history SR + YASI-GI Family history DR</i> )  |                          |        | 26  |
| Y-GI             | <b><i>YASI-GI family history domain total strength</i></b><br>( <i>YASI-GI family history DP</i> )  |                          |        | 21  |
| <b>EDUCATION</b> |   |                          |        |     |
| Y/Y-GI           | Special education/student learning, behavioural, or other disability  | No special education     | 0      | 1   |
|                  |   | Learning                 | 1      |     |
|                  |   | Behavioural              | 1      |     |
|                  |   | Developmentally disabled | 1      |     |
|                  |   | ADHD/ADD                 | 1      |     |
|                  |   | Other                    | 1      |     |
| Y/Y-GI           | Expulsions/suspensions (num)  | 0                        | 0      | 2   |
|                  |   | 1                        | 1      |     |
|                  |   | 1+                       | 2      |     |
| Y/Y-GI           | Age at first expulsion  | 0                        | 0      | 1   |
|                  |   | 1-12                     | 1      |     |
|                  |   | 12+                      | 0      |     |
| Y/Y-GI           | <b><i>Education domain total static risk (SR)</i></b><br>(special education status + expulsions/suspensions + age at first expulsion)   |                          |        | 4   |

| <b>MODEL</b>         | <b>DOMAIN &amp; Item</b>                      | <b>VALUES</b>  | <b>RECODE</b> | <b>MAX</b> |
|----------------------|---|--|---------------|------------|
| Y/Y-GI               | Youth's attendance at school in last 3 months | Not applicable                                       | 0             | <b>2</b>   |
|                      |   | Attends regularly (90% time)                         | 0             |            |
|                      |   | Some partial-day unexcused absences                  | 1             |            |
|                      |   | Some full-day unexcused absences                     | 2             |            |
|                      |   | Five or more full-day unexcused absences per quarter | 2             |            |
| Y/Y-GI               | Youth's conduct in last 3 months              | Not applicable                                       | 0             | <b>2</b>   |
|                      |   | Positive behavioural adjustment                      | 0             |            |
|                      |   | No problems reported                                 | 0             |            |
|                      |   | Infractions reported                                 | 1             |            |
|                      |   | Intervention by school administration                | 2             |            |
|                      |   | Police reports filed by school                       | 2             |            |
| Y/Y-GI               | Youth's academic performance in last 3 months | Not applicable                                       | 0             | <b>3</b>   |
|                      |   | B+ or above  | 0             |            |
|                      |   | C or better  | 0             |            |
|                      |   | C- or lower  | 1             |            |
|                      |   | Failing some classes                                 | 2             |            |
| Failing most classes | 3   |  |               |            |
| Y/Y-GI               | Youth's current school conduct                | Not applicable                                       | 0             | <b>1</b>   |
|                      |   | Consistent, stable                                   | 0             |            |
|                      |   | Improving  | 0             |            |
|                      |   | Worsening  | 1             |            |
| Y/Y-GI               | Youth believes in education                   | Not applicable                                       | 0             | <b>1</b>   |

| MODEL  | DOMAIN & Item   | VALUES  | RECODE | MAX |
|--------|---|---|--------|-----|
|        |   | Believes  | 0      |     |
|        |   | Somewhat believes                                       | 0      |     |
|        |   | Does not believe  | 1      |     |
| Y/Y-GI | Youth believes school provides supportive and encouraging environment   | Not applicable  | 0      | 1   |
|        |   | Believes  | 0      |     |
|        |   | Somewhat believes                                       | 0      |     |
|        |   | Does not believe  | 1      |     |
| Y/Y-GI | Youth's involvement in school activities in most recent school year   | Involved in 2+ activities                               | 0      | 2   |
|        |   | Involved in 1 activity                                  | 0      |     |
|        |   | Interested but not involved in any activities           | 0      |     |
|        |   | No involvement and little interest in school activities | 1      |     |
|        |   | No interest in school activities                        | 2      |     |
| Y      | <b><i>Education total dynamic risk (DR)</i></b><br>(attendance at school + youth's conduct + academic performance + current school conduct + believes in education + believes school provides supportive environment + involvement in school) |   |        | 12  |
| Y-GI   | Motivation to address school risk   | Actively committed and working on change                | 0      | 2   |
|        |   | Is cooperative or taking steps toward positive change   | 0      |     |
|        |   | School not a problem – no need for change               | 0      |     |
|        |   | Recognizes need to change but not motivated to change   | 1      |     |
|        |   | Uncooperative or unwilling to work on positive change   | 2      |     |
| Y-GI   | Youth's current enrollment status   | Not applicable  | 0      | 2   |

| MODEL  | DOMAIN & Item  | VALUES   | RECODE | MAX |
|--------|--|--|--------|-----|
|        |  | Graduated, GED                                       | 0      |     |
|        |  | Enrolled full-time                                   | 0      |     |
|        |  | Enrolled part-time                                   | 0      |     |
|        |  | Dropped out  | 1      |     |
|        |  | Suspended  | 2      |     |
|        |  | Expelled   | 2      |     |
| Y-GI   | <i>Education total dynamic risk (DR)</i><br>(attendance at school + youth's conduct + academic performance + current school conduct + believes in education + believes school provides supportive environment + involvement in school + current enrollment + motivation to address school) |  |        | 16  |
| Y/Y-GI | Youth's attendance at school in last 3 months  | Not applicable                                       | 0      | 2   |
|        |  | Attends regularly (90% time)                         | 2      |     |
|        |  | Some partial-day unexcused absences                  | 0      |     |
|        |  | Some full-day unexcused absences                     | 0      |     |
|        |  | Five or more full-day unexcused absences per quarter | 0      |     |
| Y/Y-GI | Youth's conduct in last 3 months   | Not applicable                                       | 0      | 2   |
|        |  | Positive behavioural adjustment                      | 2      |     |
|        |  | No problems reported                                 | 1      |     |
|        |  | Infractions reported                                 | 0      |     |
|        |  | Intervention by school administration                | 0      |     |
|        |  | Police reports filed by school                       | 0      |     |

| MODEL  | DOMAIN & Item  | VALUES  | RECODE | MAX |
|--------|--|---|--------|-----|
| Y/Y-GI | Youth's academic performance in last 3 months  | Not applicable  | 0      | 2   |
|        |  | B+ or above   | 2      |     |
|        |  | C or better   | 1      |     |
|        |  | C- or lower   | 0      |     |
|        |  | Failing some classes                                    | 0      |     |
|        |  | Failing most classes                                    | 0      |     |
| Y/Y-GI | Youth believes in education  | Not applicable  | 0      | 2   |
|        |  | Believes  | 2      |     |
|        |  | Somewhat believes                                       | 1      |     |
|        |  | Does not believe  | 0      |     |
| Y/Y-GI | Youth believes school provides supportive and encouraging environment  | Not applicable  | 0      | 2   |
|        |  | Believes  | 2      |     |
|        |  | Somewhat believes                                       | 1      |     |
|        |  | Does not believe  | 0      |     |
| Y/Y-GI | Youth's involvement in school activities in most recent school year  | Involved in 2+ activities                               | 2      | 2   |
|        |  | Involved in 1 activity                                  | 1      |     |
|        |  | Interested but not involved in any activities           | 1      |     |
|        |  | No involvement and little interest in school activities | 0      |     |
|        |  | No interest in school activities                        | 0      |     |
| Y/Y-GI | Teachers/staff/coaches youth is comfortable with   | 0   | 0      | 1   |
|        |  | 1+  | 1      |     |
| Y      | <b><i>Education total dynamic protective (DP)</i></b><br>(youth's attendance + youth's conduct + youth's academic performance + believes in education + believes school is supportive + youth's involvement in school + teacher's/staff/coaches youth is comfortable with) |   |        | 13  |
| Y-GI   | Youth's current enrollment status  | Not applicable  | 0      | 2   |

| MODEL | DOMAIN & Item  | VALUES  | RECODE | MAX |
|-------|--|---|--------|-----|
|       |  | Graduated, GED  | 2      |     |
|       |  | Enrolled full-time                                    | 1      |     |
|       |  | Enrolled part-time                                    | 1      |     |
|       |  | Dropped out   | 0      |     |
|       |  | Suspended   | 0      |     |
|       |  | Expelled  | 0      |     |
| Y-GI  | Motivation to address school risk  | Actively committed and working on change              | 2      | 2   |
|       |  | Is cooperative or taking steps toward positive change | 1      |     |
|       |  | School not a problem – no need for change             | 0      |     |
|       |  | Recognizes need to change but not motivated to change | 0      |     |
|       |  | Uncooperative or unwilling to work on positive change | 0      |     |
| Y-GI  | <b><i>Education total dynamic risk (DP)</i></b><br>(youth's attendance + youth's conduct + youth's academic performance + believes in education + believes school is supportive + youth's involvement in school + teacher's/staff/coaches youth is comfortable with + current enrollment + motivation to address school) |   |        | 17  |
| Y     | <b><i>YASI education domain total risk</i></b><br>(YASI education SR + YASI education DR)  |   |        | 16  |
| Y     | <b><i>YASI education domain total strength</i></b><br>(YASI education DP)  |   |        | 13  |
| Y-GI  | <b><i>YASI-GI education domain total risk</i></b><br>(YASI-GI education SR + YASI-GI education DR)   |   |        | 20  |
| Y-GI  | <b><i>YASI-GI education domain total strength</i></b><br>(YASI-GI education DP)  |   |        | 17  |
|       | <b>PEERS</b>   |   |        |     |

| MODEL  | DOMAIN & Item  | VALUES   | RECODE                              | MAX |
|--------|--|--|-------------------------------------|-----|
| Y/Y-GI | Number of months youth has been associating with negatively influencing delinquent friends | <3<br>3-6<br>7-17<br>18+   | 0<br>0<br>1<br>2                    | 2   |
| Y/Y-GI | <i>Peers total static risk (SR)</i>  |  |                                     | 2   |
| Y/Y-GI | Associates the youth spends his/her time with  | None of the above<br>Friends who have a positive pro-social influence<br>No friends or companions, no consistent friends<br>Friends who have a negative delinquent influence<br>Associates or has been seem with gang members<br>Family gang members<br>Youth is a gang member | 0<br>0<br>0<br>+1<br>+2<br>+2<br>+3 | (8) |
|        | Add all youth influences   | 0<br>1<br>2+   | 0<br>1<br>2                         | 2   |
| Y/Y-GI | Attachment to positively influencing peers   | None of the above<br>Youth maintains contact with peers who are responsible and goal-focused<br>Youth admires or emulates older adolescents in school and/or work<br>Youth has a best friend who is supportive and a positive influence  | 1<br>0<br>0<br>0                    | 1   |
| Y/Y-GI | Admiration/emulation of high risk delinquent peers   | Youth does not admire, emulate delinquent peers  | 0                                   | 3   |

| MODEL  | DOMAIN & Item   | VALUES  | RECODE | MAX |
|--------|---|---|--------|-----|
|        |   | Youth minimally admires, emulates peers                                   | 1      |     |
|        |   | Youth admires, emulates peers   | 2      |     |
|        |   | Youth is a delinquent leader who is admired or emulated by others         | 3      |     |
| Y/Y-GI | Amount of free time youth spends with negatively influencing peers  | No delinquent peers   | 0      | 4   |
|        |   | Spends 1 or 2 hours of free time per week                                 | 1      |     |
|        |   | Spends 3 to 7 hours of free time per week                                 | 2      |     |
|        |   | Spends 8 to 14 hours of free time per week                                | 3      |     |
|        |   | Spends nearly all or nearly all of free time                              | 4      |     |
| Y/Y-GI | Strength of negatively influencing peer influence   | No delinquent peers   | 0      | 3   |
|        |   | Does not go along with delinquent peers                                   | 0      |     |
|        |   | Sometimes goes along with delinquent peers                                | 1      |     |
|        |   | Usually goes along with delinquent peers                                  | 2      |     |
|        |   | Leads delinquent peers  | 3      |     |
| Y      | <i>Peers total dynamic risk (DR)</i><br>(associates youth spends time with + attachment to positive peers + admiration of high risk peers + amount of free time with negative peers + strength of negative peers) |   |        | 13  |
| Y-GI   | Intimate relationships  | High degree of stability, satisfaction and commitment to the relationship | 0      | 2   |

| MODEL | DOMAIN & Item                             | VALUES  | RECODE | MAX |
|-------|---|---|--------|-----|
|       |   | Stability of relationship evident, youth expresses satisfaction               | 0      |     |
|       |   | Minimal satisfaction in relationship/no current relationship                  | 0      |     |
|       |   | Some conflict and dissatisfaction evident in the relationship                 | 1      |     |
|       |   | High degree of instability and conflict, youth expresses high dissatisfaction | 2      |     |
| Y-GI  | Relationship risk factors                 | Victim of domestic violence   | +2     | (8) |
|       |   | Victimization with current or recent ex-partner                               | +1     |     |
|       |   | Ongoing conflict with ex-partner  | +1     |     |
|       |   | Expresses safety and protection issues with regard to spouse                  | +1     |     |
|       |   | Perpetrated domestic violence   | +2     |     |
|       |   | Partner with anti-social history  | +1     |     |
|       |   | Partner has pro-social influence  | 0      |     |
|       |   | N/A or none of the above  | 0      |     |
|       | Add relationship risk factors             | 0   | 0      | 2   |
|       |   | 1   | 1      |     |
|       |   | 2+  | 2      |     |
| Y-GI  | Motivation to address social network risk | Actively committed and working on change                                      | 0      | 2   |
|       |   | Is cooperative or taking steps toward positive change                         | 0      |     |

| MODEL  | DOMAIN & Item  | VALUES  | RECODE | MAX       |
|--------|--|---|--------|-----------|
|        |  | Social influences not a problem – no need for change                    | 0      |           |
|        |  | Recognizes need to change but not motivated to change                   | 1      |           |
|        |  | Uncooperative or unwilling to work on positive change                   | 2      |           |
| Y-GI   | <b>Peers total dynamic risk (DR)</b><br>(associates youth spends time with + attachment to positive peers + admiration of high risk peers + amount of free time with negative peers + strength of negative peers + intimate relationships + relationship risk factors + motivation to address peers) |   |        | <b>19</b> |
| Y/Y-GI | Associates the youth spends his/her time with  | None of the above   | 0      | <b>1</b>  |
|        |  | Friends who have a positive pro-social influence                        | 1      |           |
|        |  | No friends or companions, no consistent friends                         | 0      |           |
|        |  | Friends who have a negative delinquent influence                        | 0      |           |
|        |  | Associates or has been seem with gang members                           | 0      |           |
|        |  | Family gang members   | 0      |           |
|        |  | Youth is a gang member  | 0      |           |
| Y/Y-GI | Attachment to positively influencing peers   | None of the above   | 0      | <b>2</b>  |
|        |  | Youth maintains contact with peers who are responsible and goal-focused | 1      |           |
|        |  | Youth admires or emulates older adolescents in school and/or work       | 1      |           |

| MODEL  | DOMAIN & Item  | VALUES   | RECODE | MAX |
|--------|--|--|--------|-----|
|        |  | Youth has a best friend who is supportive and a positive influence | 2      |     |
| Y/Y-GI | Admiration/emulation of high risk delinquent peers                 | Youth does not admire, emulate delinquent peers                    | 1      | 1   |
|        |  | Youth minimally admires, emulates peers                            | 0      |     |
|        |  | Youth admires, emulates peers                                      | 0      |     |
|        |  | Youth is a delinquent leader who is admired or emulated by others  | 0      |     |
| Y/Y-GI | Amount of free time youth spends with negatively influencing peers | No delinquent peers  | 1      | 1   |
|        |  | Spends 1 or 2 hours of free time per week                          | 0      |     |
|        |  | Spends 3 to 7 hours of free time per week                          | 0      |     |
|        |  | Spends 8 to 14 hours of free time per week                         | 0      |     |
|        |  | Spends nearly all or nearly all of free time                       | 0      |     |
| Y/Y-GI | Strength of negatively influencing peer influence                  | No delinquent peers  | 1      | 1   |
|        |  | Does not go along with delinquent peers                            | 1      |     |
|        |  | Sometimes goes along with delinquent peers                         | 0      |     |
|        |  | Usually goes along with delinquent peers                           | 0      |     |
|        |  | Leads delinquent peers   | 0      |     |
| Y/Y-GI | Number of existing positive adult relationships in the community   | 0  | 0      | 2   |
|        |  | 1  | 1      |     |

| MODEL  | DOMAIN & Item   | VALUES  | RECODE | MAX |
|--------|---|---|--------|-----|
|        |   | 2-3   | 1      |     |
|        |   | 4+  | 2      |     |
| Y/Y-GI | Pro-social community ties   | Highly involved   | 2      | 2   |
|        |   | Involved  | 1      |     |
|        |   | Not involved  | 0      |     |
| Y      | <i>Peers total dynamic protective (DP)</i><br>(associates youth spends time with + attachment to positive peers + admiration of high risk peers + amount of free time with negative peers + strength of negative peers + number of positive adult relationships + prosocial community ties) |   |        | 10  |
| Y-GI   | Intimate relationships  | High degree of stability, satisfaction and commitment to the relationship     | 2      | 2   |
|        |   | Stability of relationship evident, youth expresses satisfaction               | 1      |     |
|        |   | Minimal satisfaction in relationship/no current relationship                  | 0      |     |
|        |   | Some conflict and dissatisfaction evident in the relationship                 | 0      |     |
|        |   | High degree of instability and conflict, youth expresses high dissatisfaction | 0      |     |
| Y-GI   | Relationship risk factors   | Victim of domestic violence   | 0      | 1   |
|        |   | Victimization with current or recent ex-partner                               | 0      |     |
|        |   | Ongoing conflict with ex-partner  | 0      |     |

| MODEL | DOMAIN & Item   | VALUES   | RECODE | MAX |
|-------|---|--|--------|-----|
|       |   | Expresses safety and protection issues with regard to spouse | 0      |     |
|       |   | Perpetrated domestic violence                                | 0      |     |
|       |   | Partner with anti-social history                             | 0      |     |
|       |   | Partner has pro-social influence                             | 1      |     |
|       |   | N/A or none of the above                                     | 0      |     |
| Y-GI  | Motivation to address social network risk   | Actively committed and working on change                     | 2      | 2   |
|       |   | Is cooperative or taking steps toward positive change        | 1      |     |
|       |   | Social influences not a problem – no need for change         | 0      |     |
|       |   | Recognizes need to change but not motivated to change        | 0      |     |
|       |   | Uncooperative or unwilling to work on positive change        | 0      |     |
| Y-GI  | <b><i>Peers total dynamic protective (DP)</i></b><br>(associates youth spends time with + attachment to positive peers + admiration of high risk peers + amount of free time with negative peers + strength of negative peers + number of positive adult relationships + prosocial community ties + intimate relationships + relationship risk factors + motivation to address social risk) |  |        | 15  |
| Y     | <b><i>YASI peers domain total risk</i></b><br>( <i>YASI peers SR + YASI peers DR</i> )  |  |        | 15  |
| Y     | <b><i>YASI peers domain total strength</i></b><br>( <i>YASI peers DP</i> )  |  |        | 10  |
| Y-GI  | <b><i>YASI-GI peers domain total risk</i></b><br>( <i>YASI-GI peers SR + YASI-GI peers DR</i> )   |  |        | 21  |

| MODEL                | DOMAIN & Item   | VALUES   | RECODE                     | MAX |
|----------------------|---|--|----------------------------|-----|
| Y-GI                 | <i>YASI-GI peers domain total strength</i><br>( <i>YASI-GI peers DP</i> ) |  |                            | 15  |
| <b>MENTAL HEALTH</b> |   |  |                            |     |
| Y/Y-GI               | Mental health   | Diagnosed<br>Past treatment<br>Past mediation  | 1<br>1<br>1                | 1   |
| Y/Y-GI               | Homicidal ideation  | No indications<br>Indications  | 0<br>1                     | 1   |
| Y/Y-GI               | Suicidal ideation   | No indications<br>Suicidal thoughts<br>Suicide attempt   | 0<br>1<br>2                | 2   |
| Y/Y-GI               | Sexual abuse  | No<br>Yes  | 0<br>1                     | 1   |
| Y/Y-GI               | Physical abuse  | No<br>Yes  | 0<br>1                     | 1   |
| Y/Y-GI               | Bullying  | No<br>Yes  | 0<br>1                     | 1   |
| Y/Y-GI               | Sexual vulnerability  | No indications<br>Yes  | 0<br>1                     | 1   |
| Y                    | <i>Mental health static risk (SR)</i><br>(add all mental health above)    |  |                            | 8   |
| Y-GI                 | Emotional abuse   | No<br>Yes  | 0<br>1                     | 1   |
| Y-GI                 | Sexual aggression   | Indications<br>No indications  | 0<br>1                     | 1   |
| Y-GI                 | Other mental health indicators  | Non-suicidal self-injurious<br>behaviour<br>Eating disorders<br>Complicated grief<br>Other traumatic events<br>Somatization<br>Other | 1<br>1<br>1<br>1<br>1<br>1 | 1   |

| MODEL  | DOMAIN & Item   | VALUES  | RECODE                              | MAX       |
|--------|---|---|-------------------------------------|-----------|
| Y-GI   | <b><i>Mental health static risk (SR)</i></b><br>(add all mental health above + emotional abuse + sexual aggression + other mental health) |   |                                     | <b>11</b> |
| Y/Y-GI | Mental health   | Current treatment<br>Current medication   | +1<br>+1                            | <b>2</b>  |
| Y      | <b><i>Mental health dynamic risk (DR)</i></b>   |   |                                     | <b>2</b>  |
| Y-GI   | Motivation to address mental/physical health  | Actively committed and working on change<br>Is cooperative or taking steps toward positive change<br>Mental health issues are not a problem; no need for change<br>Recognizes need to change but not motivated to change<br>Uncooperative or unwilling to work on positive change | 0<br>0<br>0<br>1<br>2               | <b>2</b>  |
| Y-GI   | Physical health concerns  | None of the above<br>Physical condition/diagnosis<br>Nutrition problems<br><br>Pregnancy/miscarriage<br>Sexually transmitted diseases<br>Sexually active w/o contraception<br>Other   | 0<br>1<br>1<br><br>1<br>1<br>1<br>1 | <b>1</b>  |
| Y-GI   | <b><i>Mental health dynamic risk (DR)</i></b><br>(mental health + motivation to address mental health + physical health concern)          |   |                                     | <b>5</b>  |
| Y-GI   | Motivation to address mental/physical health  | Actively committed and working on change  | 2                                   | <b>2</b>  |

| MODEL                | DOMAIN & Item  | VALUES   | RECODE                | MAX       |
|----------------------|--|--|-----------------------|-----------|
|                      |  | Is cooperative or taking steps toward positive change            | 1                     |           |
|                      |  | Mental health issues are not a problem; no need for change       | 0                     |           |
|                      |  | Recognizes need to change but not motivated to change            | 0                     |           |
|                      |  | Uncooperative or unwilling to work on positive change            | 0                     |           |
| Y-GI                 | <b><i>Mental health dynamic protective (DP)</i></b>  |  |                       | <b>2</b>  |
| Y                    | <b><i>YASI mental health domain total risk</i></b><br>(YASI mental health SR + YASI mental health DR)            |  |                       | <b>15</b> |
| Y-GI                 | <b><i>YASI-GI mental health domain total risk</i></b><br>(YASI-GI mental health SR + YASI-GI mental health DR)   |  |                       | <b>21</b> |
| Y-GI                 | <b><i>YASI-GI peers history domain total strength</i></b><br>(YASI-GI peers DP)                                  |  |                       | <b>2</b>  |
| <b>SUBSTANCE USE</b> |  |  |                       |           |
| Y/Y-GI               | Drug/alcohol age at first use  | 0-10<br>11-13<br>14<br>14+                                       | 2<br>1<br>1<br>0      | <b>2</b>  |
| Y/Y-GI               | Previous alcohol/drug treatment  | N/A or no problem<br>No<br>Yes                                   | 0<br>1<br>0           | <b>1</b>  |
| Y/Y-GI               | <b><i>Substance abuse static risk (SR)</i></b><br>(drug/alcohol age at first use + previous alcohol and drug tx) |  |                       | <b>3</b>  |
| Y/Y-GI               | Drug/substance used in the last 3 months   | None<br>Fewer<br>1-2 days per week<br>3-5 days per week<br>Daily | 0<br>0<br>1<br>2<br>3 | <b>3</b>  |
| Y/Y-GI               | Drug/substance disrupts function   | No<br>Yes  | 0<br>1                | <b>1</b>  |

| MODEL  | DOMAIN & Item   | VALUES   | RECODE                          | MAX |
|--------|---|--|---------------------------------|-----|
| Y/Y-GI | Drug/substance contributes to behaviour   | No<br>Yes  | 0<br>1                          | 1   |
| Y      | <i>Substance abuse dynamic risk (DR)</i><br>(substance in last 3 months + substance disrupts function + substance contributes to behaviour) |  |                                 | 5   |
| Y-GI   | Youth is receptive to participation in alcohol/drug treatment   | Actively committed and working on change<br>Is cooperative or taking steps toward positive change<br>Substance abuse not a problem; no need for change<br>Recognizes need to change but not motivated to change<br>Uncooperative or unwilling to work on positive change | 0<br>0<br>0<br>1<br>2           | 2   |
| Y-GI   | Primary motivation for use  | N/A/no problem<br>Peer pressure<br>Coping with stress<br>Coping with trauma<br>Physical addiction<br>Self-medicating<br>Other  | 0<br>1<br>1<br>2<br>3<br>3<br>1 | 3   |
| Y-GI   | <i>Substance abuse dynamic risk</i><br>(youth receptive to participation in substance tx + primary motivation for use)                      |  |                                 | 10  |
| Y-GI   | Youth is receptive to participation in alcohol/drug treatment   | Actively committed and working on change<br>Is cooperative or taking steps toward positive change<br>Substance abuse not a problem; no need for change   | 2<br>1<br>0                     | 2   |

| MODEL            | DOMAIN & Item  | VALUES   | RECODE | MAX |
|------------------|--|--|--------|-----|
|                  |  | Recognizes need to change but not motivated to change          | 0      |     |
|                  |  | Uncooperative or unwilling to work on positive change          | 0      |     |
| Y-GI             | Attempts to cut back   | No   | 0      | 1   |
|                  |  | Yes  | 1      |     |
| Y-GI             | <i>Substance use dynamic protective (DP)</i><br>(youth receptive to participation in substance treatment + attempts to cut back) |  |        | 3   |
| Y                | <i>YASI substance use total risk</i><br>(YASI substance use SR + YASI substance use DR)  |  |        | 8   |
| Y-GI             | <i>YASI-GI substance use total risk</i><br>(YASI-GI substance use SR + YASI-GI substance use DR)                                 |  |        | 13  |
| Y-GI             | <i>YASI-GI substance use total strength</i><br>(YASI-GI substance use DP)  |  |        | 3   |
| <b>ATTITUDES</b> |  |  |        |     |
| Y/Y-GI           | Attitude when engaged in antisocial/criminal act(s)  | Nervous, afraid, or worried                                    | 0      | 2   |
|                  |  | Uncertain or indecisive  | 0      |     |
|                  |  | Unconcerned or indifferent                                     | 0      |     |
|                  |  | Expresses resentment toward authorities                        | 1      |     |
|                  |  | Views all authorities with contempt                            | 2      |     |
| Y/Y-GI           | <i>Attitudes static risk (SR)</i><br>(attitude when engaged in antisocial/criminal act)  |  |        | 2   |
| Y/Y-GI           | Accepts responsibility   | Voluntarily accepts full responsibility for criminal behaviour | 0      | 2   |
|                  |  | Recognizes that he/she must accept responsibility              | 0      |     |
|                  |  | Indicates some awareness to accept responsibility              | 0      |     |

| MODEL  | DOMAIN & Item                   | VALUES  | RECODE | MAX |
|--------|---------------------------------|---|--------|-----|
|        |                                 | Minimizes, denies, justifies, excuses, or blames others           | 1      |     |
|        |                                 | Openly accepts or is proud of criminal behaviour                  | 2      |     |
| Y/Y-GI | Understands impact of behaviour | Fully understands the nature of harm caused to others             | 0      | 2   |
|        |                                 | Indicates awareness that harm has been caused                     | 0      |     |
|        |                                 | Does not understand or fully appreciate effects on others         | 1      |     |
|        |                                 | Minimizes or denies harm caused                                   | 1      |     |
|        |                                 | Total lack of empathy for harm caused by others                   | 2      |     |
| Y/Y-GI | Willingness to make amends      | Eagerly indicates plans for making amends                         | 0      | 2   |
|        |                                 | Indicates a desire to make amends                                 | 0      |     |
|        |                                 | Willing to cooperate with making amends                           | 0      |     |
|        |                                 | Non-committal towards making amends                               | 1      |     |
|        |                                 | Unwilling to make amends  | 2      |     |
| Y/Y-GI | Optimism                        | Genuinely optimistic about the future                             | 0      | 2   |
|        |                                 | Looks forward to the future with anticipation                     | 0      |     |
|        |                                 | Believes some things matter and he/she has a future               | 0      |     |
|        |                                 | Believes little matters because his/her future will not be bright | 1      |     |

| MODEL  | DOMAIN & Item                        | VALUES   | RECODE | MAX |
|--------|--------------------------------------|--|--------|-----|
|        |                                      | Expresses profound sense of hopelessness regarding the future    | 2      |     |
| Y/Y-GI | Law-abiding attitudes                | Clearly positive commitment toward law-abiding behaviour         | 0      | 2   |
|        |                                      | Expresses a desire to live in a law-abiding manner               | 0      |     |
|        |                                      | Expresses neutral attitude toward law-abiding behaviour          | 0      |     |
|        |                                      | Feels law-abiding behaviour does not apply to him/her            | 1      |     |
|        |                                      | Openly admits unwillingness to demonstrate law-abiding behaviour | 2      |     |
| Y/Y-GI | Respect for authority figures        | Indicates respect for the role of authorities                    | 0      | 2   |
|        |                                      | Appreciates the role of authorities                              | 0      |     |
|        |                                      | Expresses neutral attitude toward authorities                    | 0      |     |
|        |                                      | Expresses resentment toward authorities                          | 1      |     |
|        |                                      | Views all authorities with contempt                              | 2      |     |
| Y/Y-GI | Motivation to address attitudes risk | Actively committed and working on change                         | 0      | 2   |
|        |                                      | Is cooperative or taking steps toward positive change            | 0      |     |
|        |                                      | Attitudes not a problem; no need for change                      | 0      |     |
|        |                                      | Recognizes need to change but not motivated to change            | 1      |     |

| MODEL  | DOMAIN & Item   | VALUES  | RECODE | MAX |
|--------|---|---|--------|-----|
|        |   | Uncooperative or unwilling to work on positive change | 2      |     |
| Y      | <i>Attitudes dynamic risk (DR)</i><br>(accepts responsibility + understands impact of behaviour + willingness to make amends + optimism + law-abiding attitudes + respect for authority figures + motivation to address attitudes risk)                         |   |        | 14  |
| Y-GI   | Attitudes toward the CJS  | Indicates respect for the role of CJ authorities      | 0      | 2   |
|        |   | Appreciates the role of CJ authorities                | 0      |     |
|        |   | Expresses neutral attitude toward CJS                 | 0      |     |
|        |   | Expresses resentment toward CJ authorities            | 1      |     |
|        |   | Views all CJ authorities with contempt                | 2      |     |
| Y-GI   | <i>Attitudes dynamic risk (DR)</i><br>(accepts responsibility + understands impact of behaviour + willingness to make amends + optimism + law-abiding attitudes + respect for authority figures + motivation to address attitudes risk + attitudes towards CJS) |   |        | 16  |
| Y/Y-GI | Attitudes when engaged in antisocial/criminal act(s)  | Nervous, afraid, or worried                           | 2      | 2   |
|        |   | Uncertain or indecisive                               | 1      |     |
|        |   | Unconcerned or indifferent                            | 0      |     |
|        |   | Expresses resentment toward authorities               | 0      |     |
|        |   | Views all authorities with contempt                   | 0      |     |
| Y/Y-GI | <i>Attitudes static protective (SP)</i><br>(attitudes when engaged in antisocial/criminal acts)   |   |        | 2   |

| MODEL  | DOMAIN & Item                   | VALUES   | RECODE | MAX |
|--------|---------------------------------|--|--------|-----|
| Y/Y-GI | Accepts responsibility          | Voluntarily accepts full responsibility for criminal behaviour | 2      | 2   |
|        |                                 | Recognizes that he/she must accept responsibility              | 1      |     |
|        |                                 | Indicates some awareness to accept responsibility              | 1      |     |
|        |                                 | Minimizes, denies, justifies, excuses, or blames others        | 0      |     |
|        |                                 | Openly accepts or is proud of criminal behaviour               | 0      |     |
| Y/Y-GI | Understands impact of behaviour | Fully understands the nature of harm caused to others          | 2      | 2   |
|        |                                 | Indicates awareness that harm has been caused                  | 1      |     |
|        |                                 | Does not understand or fully appreciate effects on others      | 0      |     |
|        |                                 | Minimizes or denies harm caused                                | 0      |     |
|        |                                 | Total lack of empathy for harm caused by others                | 0      |     |
| Y/Y-GI | Willingness to make amends      | Eagerly indicates plans for making amends                      | 2      | 2   |
|        |                                 | Indicates a desire to make amends                              | 1      |     |
|        |                                 | Willing to cooperate with making amends                        | 1      |     |
|        |                                 | Non-committal towards making amends                            | 0      |     |
|        |                                 | Unwilling to make amends                                       | 0      |     |
| Y/Y-GI | Optimism                        | Genuinely optimistic about the future                          | 2      | 2   |

| MODEL  | DOMAIN & Item                 | VALUES  | RECODE | MAX |
|--------|-------------------------------|---|--------|-----|
|        |                               | Looks forward to the future with anticipation                     | 1      |     |
|        |                               | Believes some things matter and he/she has a future               | 1      |     |
|        |                               | Believes little matters because his/her future will not be bright | 0      |     |
|        |                               | Expresses profound sense of hopelessness regarding the future     | 0      |     |
| Y/Y-GI | Law-abiding attitudes         | Clearly positive commitment toward law-abiding behaviour          | 2      | 2   |
|        |                               | Expresses a desire to live in a law-abiding manner                | 1      |     |
|        |                               | Expresses neutral attitude toward law-abiding behaviour           | 0      |     |
|        |                               | Feels law-abiding behaviour does not apply to him/her             | 0      |     |
|        |                               | Openly admits unwillingness to demonstrate law-abiding behaviour  | 0      |     |
| Y/Y-GI | Respect for authority figures | Indicates respect for the role of authorities                     | 2      | 2   |
|        |                               | Appreciates the role of authorities                               | 1      |     |
|        |                               | Expresses neutral attitude toward authorities                     | 0      |     |
|        |                               | Expresses resentment toward authorities                           | 0      |     |
|        |                               | Views all authorities with contempt                               | 0      |     |

| MODEL                          | DOMAIN & Item  | VALUES   | RECODE | MAX       |
|--------------------------------|--|--|--------|-----------|
| Y/Y-GI                         | Motivation to address attitudes risk   | Actively committed and working on change                   | 2      | 2         |
|                                |  | Is cooperative or taking steps toward positive change      | 1      |           |
|                                |  | Attitudes not a problem; no need for change                | 0      |           |
|                                |  | Recognizes need to change but not motivated to change      | 0      |           |
|                                |  | Uncooperative or unwilling to work on positive change      | 0      |           |
| Y/Y-GI                         | <b><i>Attitudes dynamic protective (DP)</i></b><br>(accepts responsibility + understands impact of behaviour + willingness to make amends + optimism + law-abiding attitudes + respect for authority figures + motivation to address attitudes risk) |  |        | <b>14</b> |
| Y                              | <b><i>YASI attitudes total risk</i></b><br>( <i>YASI attitudes SR + YASI attitudes DR</i> )  |  |        | <b>16</b> |
| Y                              | <b><i>YASI attitudes total strength</i></b><br>( <i>YASI attitudes SP + YASI attitudes DP</i> )  |  |        | <b>16</b> |
| Y-GI                           | <b><i>YASI-GI attitudes total risk</i></b><br>( <i>YASI-GI attitudes SR + YASI-GI attitudes DR</i> )   |  |        | <b>18</b> |
| Y-GI                           | <b><i>YASI-GI attitudes total strength</i></b><br>( <i>YASI-GI attitudes SP + YASI-GI attitudes DP</i> )   |  |        | <b>16</b> |
| <b>SOCIAL/COGNITIVE SKILLS</b> |  |  |        |           |
| Y/Y-GI                         | Consequential thinking   | Acts to obtain good and avoid bad consequences             | 0      | 2         |
|                                |  | Can identify specific consequences of his/her actions      | 0      |           |
|                                |  | Understands there are good and bad consequences of actions | 0      |           |

| MODEL  | DOMAIN & Item                                      | VALUES   | RECODE | MAX |
|--------|--|--|--------|-----|
|        |  | Sometimes confused about consequences of actions             | 1      |     |
|        |  | Does not understand there are consequences of actions        | 2      |     |
| Y/Y-GI | Social perspective-taking                          | Can accept other points of view without necessarily agreeing | 0      | 2   |
|        |  | Tries to understand other points of view                     | 0      |     |
|        |  | Can reason there are two sides to a situation                | 0      |     |
|        |  | Difficulty understanding there are other points of view      | 1      |     |
|        |  | Unwilling to recognize there can be other points of view     | 2      |     |
| Y/Y-GI | Problem-solving                                    | Can successfully apply appropriate solutions to problems     | 0      | 2   |
|        |  | Can generate different solutions to problems                 | 0      |     |
|        |  | Can identify or describe problem behaviours or situations    | 0      |     |
|        |  | Sometimes identifies problems but not solutions              | 1      |     |
|        |  | Cannot identify problems or generate solutions               | 2      |     |
| Y/Y-GI | Impulse control skills to avoid getting in trouble | Uses self-control techniques to avoid trouble                | 0      | 2   |
|        |  | Knows some self-control techniques to respond to triggers    | 0      |     |

| MODEL  | DOMAIN & Item                                      | VALUES  | RECODE | MAX |
|--------|--|---|--------|-----|
|        |  | Can identify triggers   | 0      |     |
|        |  | Usually fails to identify triggers  | 1      |     |
|        |  | Cannot identify triggers that cause problem behaviours                                | 2      |     |
| Y/Y-GI | Loss of control over delinquent/criminal behaviour | Recognizes problem behaviour is controllable and accepts full responsibility          | 0      | 2   |
|        |  | Strives for some control over own behaviour   | 0      |     |
|        |  | Recognizes that some problem behaviour is controllable                                | 0      |     |
|        |  | Believes that most problem behaviour cannot be controlled                             | 1      |     |
|        |  | Believes problem behaviour is completely out of his or her control                    | 2      |     |
| Y/Y-GI | Interpersonal skills                               | Demonstrates social appeal through positive interpersonal skills                      | 0      | 2   |
|        |  | Can appropriately express needs and feelings in an assertive, non-confrontational way | 0      |     |
|        |  | Recognizes the need to nurture positive interpersonal relations with other            | 0      |     |
|        |  | Has some difficulty in expressing needs and feelings effectively                      | 1      |     |

| MODEL  | DOMAIN & Item  | VALUES  | RECODE | MAX |
|--------|--|---|--------|-----|
|        |  | Cannot express needs to others without an element of interpersonal personal conflict or lack of clarity | 2      |     |
| Y/Y-GI | Goal-setting skills  | Carefully sets out realistic goals and plans and takes active steps to achieve them                     | 0      | 2   |
|        |  | Demonstrates skills in developing realistic goals and plans   | 0      |     |
|        |  | Recognizes the need to plan, but may set unrealistic plans  | 0      |     |
|        |  | Lacks skills and motivation for developing realistic goals and plans                                    | 1      |     |
|        |  | Exhibits no interest or desire to set goals and make plans for the future                               | 2      |     |
| Y      | <i>Skills dynamic risk (DR</i><br>(consequential thinking + social perspective taking + problem-solving + impulse control skills to avoid getting in trouble + loss of control over delinquent behaviour + interpersonal skills + goal-setting skills) |   |        | 14  |
| Y-GI   | Relationship skills  | Demonstrates capacity to form healthy and mutually rewarding relationships                              | 0      | 2   |
|        |  | Demonstrates some ability to form mutually rewarding relationship                                       | 0      |     |
|        |  | Recognizes the need to nurture healthy relationships  | 0      |     |

| MODEL | DOMAIN & Item       | VALUES   | RECODE | MAX |
|-------|---------------------|--|--------|-----|
|       |                     | Has difficulty establishing mutually rewarding relationships                                   | 1      |     |
|       |                     | Inability to form mutually rewarding relationships   | 2      |     |
| Y-GI  | Expression of needs | Can appropriately express needs and feelings in an assertive, non-confrontational way          | 0      | 2   |
|       |                     | Can sometimes express needs and feelings in an assertive, non-confrontational way              | 0      |     |
|       |                     | Recognizes the need to develop interpersonal skills  | 0      |     |
|       |                     | Has some difficulty in expressing needs and feelings effectively                               | 1      |     |
|       |                     | Cannot express needs to others without an element of interpersonal conflict or lack of clarity | 2      |     |
| Y-GI  | Trust in others     | Appropriately trusts others and accepts help   | 0      | 2   |
|       |                     | Can sometimes trust and accept help  | 0      |     |
|       |                     | Recognizes that some people can be helpful   | 0      |     |
|       |                     | Often suspicious of help by others or cannot recognize appropriate help                        | 1      |     |

| MODEL | DOMAIN & Item                     | VALUES  | RECODE | MAX |
|-------|-----------------------------------|---|--------|-----|
|       |                                   | Unable to trust others or always suspicious of attempts to help     | 2      |     |
| Y-GI  | Emotional expression              | Uses appropriate coping strategies to deal with unpleasant emotions | 0      | 2   |
|       |                                   | Knows and applies appropriate ways to cope with emotions            | 0      |     |
|       |                                   | Recognizes that emotions can be expressed safely                    | 0      |     |
|       |                                   | Usually unable to cope with unpleasant emotions                     | 1      |     |
|       |                                   | Unable to cope with unpleasant emotions                             | 2      |     |
| Y-GI  | Self-efficacy                     | Confident in ability to manage problems                             | 0      | 2   |
|       |                                   | Confident that many problems can be managed                         | 0      |     |
|       |                                   | Recognizes lack of self-efficacy                                    | 0      |     |
|       |                                   | Believes that most problems cannot be managed                       | 1      |     |
|       |                                   | No confidence that he/she can manage problems                       | 2      |     |
| Y-GI  | Motivation to address skills risk | Actively committed and working on change                            | 0      | 2   |
|       |                                   | Is cooperative or taking steps toward positive change               | 0      |     |
|       |                                   | Skills not a problem; no need for change                            | 0      |     |

| MODEL  | DOMAIN & Item   | VALUES   | RECODE | MAX       |
|--------|---|--|--------|-----------|
|        |   | Recognizes need to change but not motivated to change        | 1      |           |
|        |   | Uncooperative or unwilling to work on positive change        | 2      |           |
| Y/Y-GI | <i>Skills dynamic risk (DR</i><br>(consequential thinking + social perspective taking + problem-solving + impulse control skills to avoid getting in trouble + loss of control over delinquent behaviour + interpersonal skills + goal-setting skills + relationship skills + expression of needs + trust in others + emotional expression + self-efficacy + motivation to address skills risk) |  |        | <b>26</b> |
| Y/Y-GI | Consequential thinking  | Acts to obtain good and avoid bad consequences               | 2      | <b>2</b>  |
|        |   | Can identify specific consequences of his/her actions        | 1      |           |
|        |   | Understands there are good and bad consequences of actions   | 1      |           |
|        |   | Sometimes confused about consequences of actions             | 0      |           |
|        |   | Does not understand there are consequences of actions        | 0      |           |
| Y/Y-GI | Social perspective-taking   | Can accept other points of view without necessarily agreeing | 2      | <b>2</b>  |
|        |   | Tries to understand other points of view                     | 1      |           |
|        |   | Can reason there are two sides to a situation                | 1      |           |
|        |   | Difficulty understanding there are other points of view      | 0      |           |

| MODEL  | DOMAIN & Item                                      | VALUES   | RECODE | MAX |
|--------|--|--|--------|-----|
|        |  | Unwilling to recognize there can be other points of view                     | 0      |     |
| Y/Y-GI | Problem-solving                                    | Can successfully apply appropriate solutions to problems                     | 2      | 2   |
|        |  | Can generate different solutions to problems                                 | 1      |     |
|        |  | Can identify or describe problem behaviours or situations                    | 1      |     |
|        |  | Sometimes identifies problems but not solutions                              | 0      |     |
|        |  | Cannot identify problems or generate solutions                               | 0      |     |
| Y/Y-GI | Impulse control skills to avoid getting in trouble | Uses self-control techniques to avoid trouble                                | 2      | 2   |
|        |  | Knows some self-control techniques to respond to triggers                    | 1      |     |
|        |  | Can identify triggers  | 1      |     |
|        |  | Usually fails to identify triggers   | 0      |     |
|        |  | Cannot identify triggers that cause problem behaviours                       | 0      |     |
| Y/Y-GI | Loss of control over delinquent/criminal behaviour | Recognizes problem behaviour is controllable and accepts full responsibility | 2      | 2   |
|        |  | Strives for some control over own behaviour                                  | 1      |     |
|        |  | Recognizes that some problem behaviour is controllable                       | 1      |     |

| MODEL  | DOMAIN & Item        | VALUES  | RECODE | MAX |
|--------|----------------------|---|--------|-----|
|        |                      | Believes that most problem behaviour cannot be controlled   | 0      |     |
|        |                      | Believes problem behaviour is completely out of his or her control                                      | 0      |     |
| Y/Y-GI | Interpersonal skills | Demonstrates social appeal through positive interpersonal skills  | 2      | 2   |
|        |                      | Can appropriately express needs and feelings in an assertive, non-confrontational way                   | 1      |     |
|        |                      | Recognizes the need to nurture positive interpersonal relations with other                              | 1      |     |
|        |                      | Has some difficulty in expressing needs and feelings effectively  | 0      |     |
|        |                      | Cannot express needs to others without an element of interpersonal personal conflict or lack of clarity | 0      |     |
| Y/Y-GI | Goal-setting skills  | Carefully sets out realistic goals and plans and takes active steps to achieve them                     | 2      | 2   |
|        |                      | Demonstrates skills in developing realistic goals and plans   | 1      |     |
|        |                      | Recognizes the need to plan, but may set unrealistic plans  | 1      |     |

| MODEL  | DOMAIN & Item   | VALUES  | RECODE | MAX       |
|--------|---|---|--------|-----------|
|        |   | Lacks skills and motivation for developing realistic goals and plans                  | 0      |           |
|        |   | Exhibits no interest or desire to set goals and make plans for the future             | 0      |           |
| Y      | <i>Skills dynamic protective (DP)</i><br>(consequential thinking + social perspective taking + problem-solving + impulse control skills to avoid getting in trouble + loss of control over delinquent behaviour + interpersonal skills + goal-setting skills) |   |        | <b>14</b> |
| Y/Y-GI | Relationship skills   | Demonstrates capacity to form healthy and mutually rewarding relationships            | 2      | <b>2</b>  |
|        |   | Demonstrates some ability to form mutually rewarding relationship                     | 1      |           |
|        |   | Recognizes the need to nurture healthy relationships                                  | 1      |           |
|        |   | Has difficulty establishing mutually rewarding relationships                          | 0      |           |
|        |   | Inability to form mutually rewarding relationships                                    | 0      |           |
| Y/Y-GI | Expression of needs   | Can appropriately express needs and feelings in an assertive, non-confrontational way | 2      | <b>2</b>  |
|        |   | Can sometimes express needs and feelings in an assertive, non-confrontational way     | 1      |           |

| MODEL  | DOMAIN & Item        | VALUES   | RECODE | MAX |
|--------|----------------------|--|--------|-----|
|        |                      | Recognizes the need to develop interpersonal skills  | 1      |     |
|        |                      | Has some difficulty in expressing needs and feelings effectively                               | 0      |     |
|        |                      | Cannot express needs to others without an element of interpersonal conflict or lack of clarity | 0      |     |
| Y/Y-GI | Trust in others      | Appropriately trusts others and accepts help   | 2      | 2   |
|        |                      | Can sometimes trust and accept help  | 1      |     |
|        |                      | Recognizes that some people can be helpful   | 1      |     |
|        |                      | Often suspicious of help by others or cannot recognize appropriate help                        | 0      |     |
|        |                      | Unable to trust others or always suspicious of attempts to help                                | 0      |     |
| Y/Y-GI | Emotional expression | Uses appropriate coping strategies to deal with unpleasant emotions                            | 2      | 2   |
|        |                      | Knows and applies appropriate ways to cope with emotions                                       | 1      |     |
|        |                      | Recognizes that emotions can be expressed safely   | 1      |     |
|        |                      | Usually unable to cope with unpleasant emotions  | 0      |     |

| MODEL  | DOMAIN & Item  | VALUES  | RECODE | MAX |
|--------|--|---|--------|-----|
|        |  | Unable to cope with unpleasant emotions               | 0      |     |
| Y/Y-GI | Self-efficacy  | Confident in ability to manage problems               | 2      | 2   |
|        |  | Confident that many problems can be managed           | 1      |     |
|        |  | Recognizes lack of self-efficacy                      | 1      |     |
|        |  | Believes that most problems cannot be managed         | 0      |     |
|        |  | No confidence that he/she can manage problems         | 0      |     |
| Y/Y-GI | Motivation to address skills risk  | Actively committed and working on change              | 2      | 2   |
|        |  | Is cooperative or taking steps toward positive change | 1      |     |
|        |  | Skills not a problem; no need for change              | 0      |     |
|        |  | Recognizes need to change but not motivated to change | 0      |     |
|        |  | Uncooperative or unwilling to work on positive change | 0      |     |
| Y-GI   | <i>Skills dynamic protective (DP)</i><br>(consequential thinking + social perspective taking + problem-solving + impulse control skills to avoid getting in trouble + loss of control over delinquent behaviour + interpersonal skills + goal-setting skills + relationship skills + expression of needs + trust in others + emotional expression + self-efficacy + motivation to address skills risk) |   |        | 26  |
| Y      | <i>YASI skills total risk</i><br>(YASI skills DR)  |   |        | 14  |

| MODEL                             | DOMAIN & Item  | VALUES  | RECODE | MAX |
|-----------------------------------|--|---|--------|-----|
| Y                                 | <i>YASI skills total strength</i><br>( <i>YASI skills DP</i> )       |   |        | 14  |
| Y-GI                              | <i>YASI-GI skills total risk</i><br>( <i>YASI-GI skills DR</i> )     |   |        | 26  |
| Y-GI                              | <i>YASI-GI skills total strength</i><br>( <i>YASI-GI skills DP</i> ) |   |        | 26  |
| <b>EMPLOYMENT &amp; FREE TIME</b> |  |   |        |     |
| Y/Y-GI                            | History of employment  | Currently employed  | 0      | (3) |
|                                   |  | Never employed  | 0      |     |
|                                   |  | Prior successful employment   | 0      |     |
|                                   |  | Fired or quit because of poor performance                                 | +1     |     |
|                                   |  | Fire or quit because of conflict with employer or coworkers               | +2     |     |
|                                   | Recode   | 0   | 0      | 2   |
|                                   |  | 1   | 1      |     |
|                                   |  | 2+  | 2      |     |
| Y/Y-GI                            | <i>Employment static risk (SR)</i><br>(history of employment)        |   |        | 2   |
| Y/Y-GI                            | Structured recreational activities                                   | Involved in two or more activities  | 0      | 1   |
|                                   |  | Involved in one activity  | 0      |     |
|                                   |  | Interested but not involved   | 0      |     |
|                                   |  | Not interested in any activities  | 1      |     |
| Y/Y-GI                            | Challenging/exciting hobbies/activities                              | Identifies hobby(s) or activities that are currently challenging/exciting | 0      | 1   |
|                                   |  | Can identify hobby(s) or activities that would be challenging/exciting    | 0      |     |

| MODEL  | DOMAIN & Item   | VALUES  | RECODE | MAX |
|--------|---|---|--------|-----|
|        |   | Cannot identify hobby(s) or activities that would be challenging/exciting | 1      |     |
| Y/Y-GI | Decline in interest in positive leisure pursuits  | Recent increase in interest in positive leisure pursuits                  | 0      | 1   |
|        |   | No change, or never experienced positive leisure pursuits                 | 0      |     |
|        |   | Decline in interest in positive leisure pursuits                          | 1      |     |
| Y      | <i>Employment dynamic risk (DR)</i><br>(structured recreational activities + challenging/exciting hobbies + decline in interest in positive leisure pursuits) |   |        | 3   |
| Y/Y-GI | Unstructured recreational activities  | Involved in two or more activities  | 0      | 1   |
|        |   | Involved in one activity  | 0      |     |
|        |   | Interested but not involved   | 0      |     |
|        |   | Not interested in any activities  | 1      |     |
| Y/Y-GI | Motivation to address free time risk  | Actively committed and working on change                                  | 0      | 2   |
|        |   | Is cooperative or taking steps toward positive change                     | 0      |     |
|        |   | Free time is not a problem; no need for change                            | 0      |     |
|        |   | Recognizes need to change but not motivated to change                     | 1      |     |
|        |   | Uncooperative or unwilling to work on positive change                     | 2      |     |

| MODEL  | DOMAIN & Item   | VALUES  | RECODE                  | MAX        |
|--------|---|---|-------------------------|------------|
| Y-GI   | <i>Employment dynamic risk (DR)</i><br>(structured recreational activities + challenging/exciting hobbies + decline in interest in positive leisure pursuits + unstructured recreational activities + motivation to address free time risk) |   |                         | <b>6</b>   |
| Y/Y-GI | History of employment   | Currently employed<br>Never employed<br>Prior successful employment<br>Fired or quit because of poor performance<br>Fire or quit because of conflict with employer or coworkers | 0<br>0<br>1<br>0<br>0   | <b>1</b>   |
| Y/Y-GI | Total number of times youth has been employed   | 0<br>1<br>1+  | 0<br>1<br>2             | <b>2</b>   |
| Y/Y-GI | Number of weeks of longest period of employment   | <4<br>4 to 23<br>>23  | 0<br>1<br>2             | <b>2</b>   |
| Y/Y-GI | <i>Employment static protective (SP)</i><br>(History of employment + total number of times youth has been employed + number of weeks longest employment)  |   |                         | <b>5</b>   |
| Y/Y-GI | History of employment   | Currently employed<br>Never employed<br>Prior successful employment<br>Fired or quit because of poor performance<br>Fire or quit because of conflict with employer or coworkers | +1<br>0<br>+1<br>0<br>0 | <b>(2)</b> |
| Y/Y-GI | Number of weeks of longest period of employment   | <4<br>4 to 23   | 0<br>1                  | <b>2</b>   |

| MODEL  | DOMAIN & Item  | VALUES  | RECODE | MAX |
|--------|--|---|--------|-----|
|        |  | >23   | 2      |     |
| Y/Y-GI | Positive personal relationships with employers or adult coworkers  | 0   | 0      | 1   |
|        |  | 1   | 0      |     |
|        |  | 1+  | 1      |     |
| Y/Y-GI | Structured recreational activities   | Involved in two or more activities  | 1      | 1   |
|        |  | Involved in one activity  | 1      |     |
|        |  | Interested but not involved   | 0      |     |
|        |  | Not interested in any activities  | 0      |     |
| Y/Y-GI | Challenging/exciting hobbies/activities  | Identifies hobby(s) or activities that are currently challenging/exciting | 2      | 2   |
|        |  | Can identify hobby(s) or activities that would be challenging/exciting    | 1      |     |
|        |  | Cannot identify hobby(s) or activities that would be challenging/exciting | 0      |     |
| Y/Y-GI | Decline in interest in positive leisure pursuits   | Recent increase in interest in positive leisure pursuits                  | 1      | 1   |
|        |  | No change, or never experienced positive leisure pursuits                 | 0      |     |
|        |  | Decline in interest in positive leisure pursuits                          | 0      |     |
| Y      | <i>Employment dynamic protective (DP)</i><br>(Positive personal relationships with employers or adult coworkers + structured recreational activities + challenging/exciting hobbies/activities + decline in positive leisure pursuits) |   |        | 5   |

| MODEL  | DOMAIN & Item   | VALUES  | RECODE | MAX       |
|--------|---|---|--------|-----------|
| Y/Y-GI | Unstructured recreational activities  | Involved in two or more activities                    | 1      | <b>1</b>  |
|        |   | Involved in one activity                              | 1      |           |
|        |   | Interested but not involved                           | 0      |           |
|        |   | Not interested in any activities                      | 0      |           |
| Y/Y-GI | Motivation to address free time risk  | Actively committed and working on change              | 2      | <b>2</b>  |
|        |   | Is cooperative or taking steps toward positive change | 1      |           |
|        |   | Free time is not a problem; no need for change        | 0      |           |
|        |   | Recognizes need to change but not motivated to change | 0      |           |
|        |   | Uncooperative or unwilling to work on positive change | 0      |           |
| Y-GI   | <b><i>Employment dynamic protective (DP)</i></b><br>(Positive personal relationships with employers or adult coworkers + structured recreational activities + challenging/exciting hobbies/activities + decline in positive leisure pursuits + unstructured recreational activities + motivation to address free time risk) |   |        | <b>8</b>  |
| Y      | <b><i>YASI employment total risk</i></b><br>( <i>YASI employment SR + YASI employment DR</i> )  |   |        | <b>5</b>  |
| Y      | <b><i>YASI employment total strength</i></b><br>( <i>YASI employment SP + YASI employment DP</i> )  |   |        | <b>10</b> |
| Y-GI   | <b><i>YASI-GI employment total risk</i></b><br>( <i>YASI-GI employment SR + YASI-GI employment DR</i> )   |   |        | <b>8</b>  |
| Y-GI   | <b><i>YASI-GI employment total strength</i></b><br>( <i>YASI-GI employment SP + YASI-GI employment DP</i> )   |   |        | <b>13</b> |

| MODEL                          | DOMAIN & Item   | VALUES                          | RECODE | MAX         |
|--------------------------------|---|---------------------------------|--------|-------------|
| <b>VIOLENCE AND AGGRESSION</b> |   |                                 |        |             |
| Y/Y-GI                         | Violence  | No reports of violence          | 0      | <b>(16)</b> |
|                                |   | Displaying a weapon             | +2     |             |
|                                |   | Use of a weapon (illegally)     | +1     |             |
|                                |   | Bullying/threatening people     | +1     |             |
|                                |   | Willful destruction of property | +1     |             |
|                                |   | Assaultive behaviour            | +2     |             |
|                                |   | Assault causing injury          | +2     |             |
|                                |   | Deliberate fire starting        | +2     |             |
|                                |   | Animal cruelty                  | +1     |             |
| Y-GI                           |   | Sexual aggression               | +2     |             |
| Y-GI                           |   | Domestic violence               | +2     |             |
| Y                              | <i>Aggression static risk</i><br>(displaying a weapon + use of weapon illegally +<br>bullying/threatening people + willing destruction of property<br>+ assaultive behaviour + assault causing injury + deliberate<br>fire starting + animal cruelty) |                                 |        | <b>(13)</b> |
|                                |   |                                 |        | <b>2</b>    |

| MODEL  | DOMAIN & Item  | VALUES  | RECODE                | MAX  |
|--------|--|---|-----------------------|------|
| Y-GI   | <i>Aggression static risk</i><br>(displaying a weapon + use of weapon illegally + bullying/threatening people + willing destruction of property + assaultive behaviour + assault causing injury + deliberate fire starting + animal cruelty + sexual aggression + domestic violence) |   |                       | (17) |
| Y/Y-GI | Hostile attributions   | Can easily tolerate criticism or hostility directed by others<br>Shows restraint in dealing with conflict from others<br>Recognizes that most people do not have mal-intentions<br>Frequently attributes hostile intentions to non-confrontational behaviour<br>Attributes almost all neutral actions of people as hostile and antagonistic | 0<br>0<br>0<br>1<br>2 | 2    |
| Y/Y-GI | Frustration tolerance  | Never gets upset over small things or has tantrums<br>Rarely gets upset over minor issues or has tantrums<br>Sometimes gets upset over minor issues<br>Frequently gets upset over minor issues or has tantrums<br>Highly volatile with reputation for fits of anger and rage  | 0<br>0<br>1<br>2<br>3 | 3    |
| Y/Y-GI | Belief in use of physical aggression to resolve disagreement or conflict   | Believes violence is rarely appropriate or necessary  | 0                     | 2    |

| MODEL | DOMAIN & Item  | VALUES  | RECODE | MAX |
|-------|--|---|--------|-----|
|       |  | Believes violence is sometimes appropriate or necessary   | 1      |     |
|       |  | Believes violence is often appropriate or necessary       | 2      |     |
| Y     | <i>Aggression and violent dynamic risk (DR)</i><br>(hostile attributions + frustration tolerance + belief in use of physical aggression to resolve disagreement or conflict) |   |        | 7   |
| Y-GI  | Anger management skills  | Uses anger control techniques to avoid aggression         | 0      | 2   |
|       |  | Knows some self-control techniques to respond to triggers | 0      |     |
|       |  | Can identify triggers                                     | 0      |     |
|       |  | Cannot identify triggers of anger                         | 1      |     |
|       |  | Cannot identify physical cues to anger                    | 2      |     |
| Y-GI  | Frequently in conflict with others   | Never in conflict with others                             | 0      | 3   |
|       |  | Rarely in conflict with others                            | 0      |     |
|       |  | Sometimes in conflict with others                         | 1      |     |
|       |  | Frequently in contact                                     | 2      |     |
|       |  | Constantly in conflict with others                        | 3      |     |

| MODEL  | DOMAIN & Item   | VALUES  | RECODE | MAX |
|--------|---|---|--------|-----|
| Y      | <i>Aggression and violent dynamic risk (DR)</i><br>(hostile attributions + frustration tolerance + belief in use of physical aggression to resolve disagreement or conflict + anger management skills + frequently in conflict with others) |   |        | 12  |
| Y/Y-GI | Hostile attributions  | Can easily tolerate criticism or hostility directed by others               | 2      | 2   |
|        |   | Shows restraint in dealing with conflict from others                        | 1      |     |
|        |   | Recognizes that most people do not have mal-intentions                      | 1      |     |
|        |   | Frequently attributes hostile intentions to non-confrontational behaviour   | 0      |     |
|        |   | Attributes almost all neutral actions of people as hostile and antagonistic | 0      |     |
| Y/Y-GI | Frustration tolerance   | Never gets upset over small things or has tantrums                          | 2      | 2   |
|        |   | Rarely gets upset over minor issues or has tantrums                         | 1      |     |
|        |   | Sometimes gets upset over minor issues                                      | 0      |     |
|        |   | Frequently gets upset over minor issues or has tantrums                     | 0      |     |
|        |   | Highly volatile with reputation for fits of anger and rage                  | 0      |     |
| Y/Y-GI | Anger management skills   | Uses anger control techniques to avoid aggression                           | 2      | 2   |
|        |   | Knows some self-control techniques to respond to triggers                   | 1      |     |
|        |   | Can identify triggers   | 1      |     |

| MODEL  | DOMAIN & Item   | VALUES                                 | RECODE | MAX |
|--------|---|--|--------|-----|
|        |   | Cannot identify triggers of anger      | 0      |     |
|        |   | Cannot identify physical cues to anger | 0      |     |
| Y/Y-GI | Frequently in conflict with others  | Never in conflict with others          | 2      | 2   |
|        |   | Rarely in conflict with others         | 1      |     |
|        |   | Sometimes in conflict with others      | 0      |     |
|        |   | Frequently in contact                  | 0      |     |
|        |   | Constantly in conflict with others     | 0      |     |
| Y/Y-GI | <i>Aggression and violence dynamic protective (DP)</i><br>(hostile attributions + frustration tolerance + anger management skills + frequently in conflict with the others) |  |        | 8   |
| Y      | <i>YASI violence total risk</i><br>(YASI violence SR + YASI violence DR)  |  |        | 9   |
| Y      | <i>YASI violence total strength</i><br>(YASI violence SP + YASI violence DP)  |  |        | 8   |
| Y-GI   | <i>YASI-GI violence total risk</i><br>(YASI-GI violence SR + YASI-GI violence DR)   |  |        | 14  |
| Y-GI   | <i>YASI-GI violence total strength</i><br>(YASI-GI violence DP)   |  |        | 8   |

| MODEL | DOMAIN & Item                                   | VALUES | RECODE | MAX                    |
|-------|---|--------|--------|------------------------|
|       | <b>TOTALS</b>                                   |        |        | <b>PLAUSIBLE RANGE</b> |
|       | <i>YASI static risk total</i>                   |        |        | 0-28                   |
|       | <i>YASI dynamic risk total</i>                  |        |        | 0-85                   |
|       | <b>YASI TOTAL RISK</b>                          |        |        | 0-113                  |
| Y     | <i>YASI static protective total</i>             |        |        | 0-7                    |
| Y     | <i>YASI dynamic protective total</i>            |        |        | 0-79                   |
| Y     | <b>YASI TOTAL STRENGTH</b>                      |        |        | 0-86                   |
| Y     | <b>YASI TOTAL ADJUSTED RISK (RISK-STRENGTH)</b> |        |        | -86-113                |
|       | <i>YASI-GI static risk total</i>                |        |        | 0-31                   |
|       | <i>YASI-GI dynamic risk total</i>               |        |        | 0-131                  |
|       | <b>YASI-GI TOTAL RISK</b>                       |        |        | 0-162                  |
| Y-GI  | <i>YASI-GI static protective total</i>          |        |        | 0-7                    |
| Y-GI  | <i>YASI-GI dynamic protective total</i>         |        |        | 0-106                  |
| Y-GI  | <b>YASI-GI TOTAL STRENGTH</b>                   |        |        | 0-113                  |
| Y-GI  | <b>YASI-GI TOTAL ADJUSTED RISK</b>              |        |        | -113-162               |

**Appendix E: YASI-GI Assessment Implemented in Pathways to Recidivism Study**



Research IDNO: \_\_\_\_\_

**Carleton/CAMH Pathways Study Full Assessment Version**

*Both Genders*

|  |  |                                |
|--|--|--------------------------------|
| <b>1</b>   | <b>Criminal History</b>  |                                |
| ▶  | ▪ Pre-Screen Items are Shaded  |                                |
| ▶  | ▪ Complete this section using official records and supplementary information gathered from an interview with the youth. Enter "0" in the boxes if there were no occurrences of the identified incidents. |                                |
| 1. <b>Previous police contacts for offenses:</b> Check <b>No</b> if this is the first police contact. Check <b>Yes</b> if there were any previous police contacts that resulted in a disposition or Extra Judicial Sanction.   |  | ONo O Yes                      |
| 2. <b>Age at first police contact for an offence:</b> Include any police contacts that resulted in a disposition or an Extra Judicial Sanction.  |  | Age at 1 <sup>st</sup> Offense |
| 3. <b>Number of police contacts:</b> Total number of police contacts that resulted in a disposition or an Extra Judicial Sanction.   |  |                                |
| 4. <b>Police contacts for Category I offences:</b> Police contacts for Category I offences that resulted in a disposition or an Extra Judicial Sanction.   |  | ONo OYes                       |
| 5. <b>Adult court:</b> Total number of offences processed in adult court. /*including outstanding charges*/  |  |                                |
| 6. <b>Weapon offences:</b> Total number of police contacts for firearm/weapon offenses that resulted in a disposition or an Extra Judicial Sanction.   |  |                                |
| 7. <b>Police contacts for offences against another person:</b> Total number of police contacts for offenses against another person that resulted in a disposition or an Extra Judicial Sanction. Includes threats, force, or physical harm to another person such as homicide, murder, manslaughter, assault, any sexual offenses, robbery, kidnapping, domestic violence, coercion, harassment, intimidation, obscene or harassing phone call, etc. |  |                                |
| 8. <b>Police contacts for Category I offences against another person:</b> Police contacts for Category I offences against another person that resulted in a disposition or an Extra Judicial Sanction.   |  | ONo OYes                       |
| 9. <b>Placements:</b> Total number of placements with Children's Aids Society (for any reason).  |  |                                |
| 10. <b>Number of times admitted to remand:</b> Total number of times youth was placed in custody on a pre-trial basis (before sentencing).   |  |                                |
| 11. <b>Number of times admitted to custody:</b> Total number of times youth was sentenced to Open or Closed custody.   |  |                                |
| 12. <b>Escapes:</b> Total number of attempted or actual escapes from any custodial facility (including remand, Open or Closed custody).  |  |                                |
| 13. <b>Failure-to-appear in court:</b> Total number of failures-to-appear in court that resulted in issuing bench warrants.  |  |                                |
| 14. <b>Number of Breaches of Supervision:</b> Total number of breaches of any supervision (probation, post-release or bail supervision). If any, check all types that apply :<br><input type="checkbox"/> Breach of Conditions <input type="checkbox"/> New Offence(s)   |  |                                |

| <b>2</b>   |   | <b>Family</b>   |  |  |  |
|--|---|---|--|--|--|
| <b>Youth's current living arrangements ('D3M'):</b><br><br>• Check all that apply.   | <input type="checkbox"/> Mother (biological or adopted)<br><input type="checkbox"/> Father (biological or adoptive)<br><input type="checkbox"/> Stepparent<br><input type="checkbox"/> Siblings<br><input type="checkbox"/> Other relatives<br><input type="checkbox"/> Other adult | <input type="checkbox"/> romantic partner [but at parent's house]<br><input type="checkbox"/> romantic partner [but not at parent's house]<br><input type="checkbox"/> Foster/group home<br><input type="checkbox"/> Independent<br><input type="checkbox"/> Homeless/shelter<br><input type="checkbox"/> Other |  |  |  |
| <b>If the youth is a parent, enter the number of children and use grid below to record information on each child.</b>  |   |   | <b>Number of Children</b>                  |  |  |
| <i>Child's Name</i>  | <i>Age</i>  | <i>Gender</i><br>M F  | <i>Youth has Custody</i>                   | <i>Other Parent or Family Member has Custody</i> | <i>Foster or Agency Custody</i>                    |
| 1  |   | i i   | i  | i  | i  |
| 2  |   | i i   | i  | i  | i  |
| 3  |   | i i   | i  | i  | i  |
| <b>1. Runaways or times kicked out of home:</b> Include times the youth did not voluntarily return within 24 hours. Only include incidents reported by or to law enforcement. Enter 0 if none, up to a maximum of 5. |   |   |  | <b>Times kicked out or locked out</b>            |  |
|  |   |   |  | <b>Number of Runaways</b>                        |  |
| <b>2. Has there ever been a family court finding of any child neglect (relating to a custodial parent)?</b>  |   |   |  |  | <input type="radio"/> No <input type="radio"/> Yes |
| <b>3. Compliance with parental rules ('D3M'):</b>  | ● --  | ● -   | ● 0  | ● +  | ● ++   |
| Youth consistently disobeys, and/or is hostile   |   | No pro-social rules in place  | Youth often disobeys rules (or Family N/A) | Youth sometimes obeys or obeys some rules        | Youth usually obeys and follows rules              |
| <b>4. Circumstances of family members who are living in the household ('D3M'):</b><br>• Check all that apply.  | Mother  | Father  | Stepparent                                 | Sibling  | Other  |
| Non-applicable   | i   | i   | i  | i  | i  |
| No problems  | i   | i   | i  | i  | i  |
| Alcohol/Drug Problems  | i   | i   | i  | i  | i  |
| Mental Health Problems   | i   | i   | i  | i  | i  |
| Youth/Adult Criminal Record (historic)   | i   | i   | i  | i  | i  |
| Youth/Adult Violent Criminal Record (historic)   | i   | i   | i  | i  | i  |
| <b>5. Historic problems of family members who lived in the environment in which the youth was primarily raised:</b><br>• Check all that apply. Includes #4.  | Mother  | Father  | Stepparent                                 | Sibling  | Other  |
| Non-applicable   | i   | i   | i  | i  | i  |
| No problems  | i   | i   | i  | i  | i  |
| Alcohol/Drug Problems  | i   | i   | i  | i  | i  |
| Mental Health Problems   | i   | i   | i  | i  | i  |
| Youth/Adult Criminal Record  | i   | i   | i  | i  | i  |
| Youth/Adult Violent Criminal Record  | i   | i   | i  | i  | i  |
| <b>6. Parental/custodial supervision ('D3M'):</b>  | ● --  | ● -   | ● 0  | ● +  | ● ++   |
| Consistently inadequate supervision  |   | Some inadequate supervision   | Some supervision or N/A                    | Some good supervision                            | Good supervision                                   |
| <b>*Response Legend</b>  | ● --  | ● -   | ● 0  | ● +  | ● ++   |
|  | <b>Risk Responses</b>   |   | <b>Neutral</b>                             | <b>Protective Factors</b>                        |  |

|  |  |  |   |   |   |
|--|--|--|---|---|---|
| <p><b>7. Appropriate consequences for bad behavior: Appropriate means clear communication, timely response, and response proportionate to conduct.</b></p> | <p>● --<br/>Never appropriate or no consequences</p>   | <p>● --<br/>Usually not appropriate consequences</p>                   | <p>● 0<br/>Some consequences are used or N/A</p>  | <p>● +<br/>Sometimes appropriate consequences</p>             | <p>● ++<br/>Consistently appropriate consequences</p>               |
| <p><b>8. Appropriate rewards for good behavior. Rewards include affection, praise, or other tangible means.</b></p>  | <p>● --<br/>Never appropriate or no rewards</p>  | <p>● --<br/>Usually not appropriate rewards</p>                        | <p>● 0<br/>Some rewards are used or N/A</p>   | <p>● +<br/>Sometimes appropriate rewards</p>                  | <p>● ++<br/>Consistently appropriate rewards</p>                    |
| <p><b>9. Parental attitude toward youth's maladaptive behavior:</b></p>  | <p>● ---<br/>Proud of youth's maladaptive behavior</p>   | <p>● --<br/>Accepts youth's maladaptive behavior as okay</p>           | <p>● 0<br/>Minimizes, denies, justifies, excuses maladaptive behavior, blames others/circumstances</p>  | <p>● +<br/>Shows some disapproval of behavior</p>             | <p>● ++<br/>Clearly disapproves of youth's maladaptive behavior</p> |
| <p><b>10. Support network for family; extended family and friends who can provide additional support:</b></p>  | <p>● -<br/>No family support network</p>   |  | <p>● 0<br/>Some family support network</p>  | <p>● +<br/>Strong family support network</p>                  |   |
| <p><b>11. Family provides opportunities for youth to participate in family activities.</b></p>   | <p>● -<br/>No opportunities for involvement provided</p>   |  | <p>● 0<br/>Some opportunities for involvement provided</p>  | <p>● +<br/>Ongoing opportunities for involvement provided</p> |   |
| <p><b>12. Family provides opportunities for youth to learn, grow and succeed:</b></p>  | <p>● -<br/>No opportunities for growth provided</p>  |  | <p>● 0<br/>Some opportunities for growth provided</p>   | <p>● +<br/>Ongoing opportunities for growth provided</p>      |   |
| <p><b>13. Family member(s) youth feels close to or has good relationship with:</b><br/>● Check all that apply.</p>   | <p><input type="checkbox"/> + Mother/female caretaker<br/><input type="checkbox"/> + Father/male caretaker<br/><input type="checkbox"/> + Female sibling</p>   |  | <p><input type="checkbox"/> + Male sibling<br/><input type="checkbox"/> + Extended family<br/><input type="checkbox"/> - No One</p>   |   |   |
| <p><b>14. Parental love, caring, and support of youth:</b></p>   | <p>● --<br/>Hostile toward youth, berating, belittling</p>   | <p>● --<br/>Indifferent, uncaring, uninterested, unwilling to help</p> | <p>● 0<br/>Some caring or N/A</p>   | <p>● +<br/>Inconsistent love, caring, and support</p>         | <p>● ++<br/>Consistent love, caring, and support</p>                |
| <p><b>15. Level of conflict between parents, between youth and parents, and among siblings:</b><br/>● Check all that apply.</p>                            | <p><input type="checkbox"/> 0 No Conflict<br/><input type="checkbox"/> Some conflict that is well managed<br/><input type="checkbox"/> Some conflict that is distressing<br/><input type="checkbox"/> Verbal intimidation, yelling, heated arguments</p> |  | <p><input type="checkbox"/> Threats of physical violence<br/><input type="checkbox"/> Physical violence between parents<br/><input type="checkbox"/> Physical violence between parents and children<br/><input type="checkbox"/> Physical violence between siblings<br/><input type="checkbox"/> Not Applicable</p> |   |   |

|  |  |  |   |   |   |
|--|--|--|---|---|---|
| <b>16. Youth's attachment to children:</b>   | ● --   | ● -  | ● 0   | ● +   | ● ++  |
|  | High degree of conflict or absence of attachment   | Lacks interest or difficulty establishing attachment       | Minimally rewarding relationship with children (or no children) | Rewarding relationships with children                 | Highly rewarding relationships                        |
| <b>17. Youth's parenting skills:</b>   | ● --   | ● -  | ● 0   | ● +   | ● ++  |
|  | Low interest in parenting role or major parenting skill deficits are recognized or evident | Some level of parenting skill deficit expressed or evident | Parenting skills are not a major issue/deficit (or no children) | Parenting skills appear adequate and non-problematic  | Confident and proficient parenting skills are evident |
| <b>18. Motivation to address risk in family (e.g., willingness to reconnect or build family relationships)</b> | ● --   | ● -  | ● 0   | ● +   | ● ++  |
|  | Uncooperative or unwilling to work on positive change                                      | Recognizes need to change but not motivated to change      | Family not a problem – no need for change or NA                 | Is cooperative or taking steps toward positive change | Actively committed and working on change              |

**3 Social Networks**

|   |  |   |
|---|--|---|
| <b>1. Associates the youth spends his/her time with:</b><br>• Check all that apply.   | <input type="checkbox"/> + Friends who have a positive pro-social influence<br><input type="checkbox"/> - No friends or companions, no consistent friends<br><input type="checkbox"/> - Friends who have a negative delinquent influence | <input type="checkbox"/> - Associates or has been seen with gang members<br><input type="checkbox"/> - Family gang members<br><input type="checkbox"/> - Youth is a gang member<br><input type="checkbox"/> None of the above |
| <b>2. Attachment to positively influencing peer(s):</b><br>• Check all that apply.  | <input type="checkbox"/> + Youth maintains contact with peers who are responsible and goal-focused<br><input type="checkbox"/> + Youth admires or emulates older adolescents in school and/or work                                       | <input type="checkbox"/> + Youth has a best friend who is supportive and a positive influence<br><input type="checkbox"/> None of the above   |
| <b>3. Admiration/emulation of high risk delinquent peers:</b><br>• Check all that apply.  | <input type="checkbox"/> + Youth does not admire, emulate delinquent peers<br><input type="checkbox"/> 0 Youth minimally admires, emulates peers   | <input type="checkbox"/> - Youth admires, emulates peers<br><input type="checkbox"/> - Youth is a delinquent leader who is admired or emulated by others  |
| <b>4. Number of months youth has been associating with negatively influencing/delinquent friends/gang:</b> Enter 0 if no delinquent friends/gangs.  |  | Months has associated with delinquent friends<br>Months has associated with gang  |
| <b>5. Amount of free time youth spends with negatively influencing/delinquent peers:</b>  | <input type="radio"/> + No delinquent peers<br><input type="radio"/> 0 Spends 1 or 2 hours of free time per week<br><input type="radio"/> - Spends 3 to 7 hours of free time per week  | <input type="radio"/> - Spends 8 to 14 hours of free time per week<br><input type="radio"/> - Spends all or nearly all of free time   |
| <b>6. Strength of negatively influencing/delinquent peer influence:</b><br>• Check all that apply.  | <input type="checkbox"/> + No delinquent peers<br><input type="checkbox"/> + Does not go along with delinquent peers<br><input type="checkbox"/> 0 Sometimes goes along with delinquent peers  | <input type="checkbox"/> - Usually goes along with delinquent peers<br><input type="checkbox"/> - Leads delinquent peers  |
| <b>7. Number of existing positive adult relationships in the community:</b><br>Adults who provide support and model pro-social behavior, such as a religious leader, club member, community person, mentor, previous employer, or any other non-family adult(s)—including youth service workers. Enter number of adults up to 5. If none enter 0. Exclude school-based relationships. |  | <b>Number of existing adult relationship(s) in the community</b>  |

|   |  |   |   |   |   |
|---|--|---|---|---|---|
| <b>8. Pro-social community ties:</b> Youth is involved in community organizations that provide explicit opportunities for learning pro-social behavior and attitudes (e.g., church, community service clubs, volunteer activities). |  | <input type="radio"/> + Highly Involved<br><input type="radio"/> + Involved   | <input type="radio"/> - Not Involved                              |   |   |
| <b>9. Intimate relationships:</b>   | <input type="radio"/> ---  | <input type="radio"/> --  | <input type="radio"/> 0   | <input type="radio"/> +   | <input type="radio"/> ++  |
|   | High degree of instability and conflict, youth expresses high dissatisfaction  | Some conflict and dissatisfaction evident in the relationship   | Minimal satisfaction in relationship (or no current relationship) | Stability of relationship evident, youth expresses satisfaction | High degree of stability, satisfaction and commitment to the relationship |
| <b>10. Relationship risk factors:</b><br>• Check all that apply.  | <input type="checkbox"/> - Victim of domestic violence<br><input type="checkbox"/> - Victimization with current or recent ex-partner<br><input type="checkbox"/> - Ongoing conflict with ex-partner<br><input type="checkbox"/> - Expresses safety and protection issues with regard to spouse | <input type="checkbox"/> - Perpetrated domestic violence<br><input type="checkbox"/> - Partner with anti-social history<br><input type="checkbox"/> + Partner has pro-social influence<br><input type="checkbox"/> 0 N/A or none of the above |   |   |   |
| <b>11. Motivation to address social network risk</b> (e.g., willingness to reconnect or build pro-social relationships, desire to change, etc.)   | <input type="radio"/> --   | <input type="radio"/> -   | <input type="radio"/> 0   | <input type="radio"/> +   | <input type="radio"/> ++  |
|   | Uncooperative or unwilling to work on positive change  | Recognizes need to change but not motivated to change   | Social influences not a problem – no need for change              | Is cooperative or taking steps toward positive change           | Actively committed and working on change                                  |

**4 Mental Health**

| 1. Mental Health Conditions (Diagnosed)   | Age of Onset | Past Treatment | Current Condition | Treatment Received | Medication Prescribed | Compliance with Treatment | Condition Now Stable |
|---|--------------|----------------|-------------------|--------------------|-----------------------|---------------------------|----------------------|
| <input type="checkbox"/> No Conditions<br><input type="checkbox"/> Conditions (Provide Details Below) |              |                |                   |                    |                       |                           |                      |
| Depression or other Affective Disorder  |              | i              | i                 | i                  | i                     | i                         | i                    |
| Anxiety Disorder  |              | i              | i                 | i                  | i                     | i                         | i                    |
| Bi-Polar Disorder   |              | i              | i                 | i                  | i                     | i                         | i                    |
| Personality disorder (Borderline)   |              | i              | i                 | i                  | i                     | i                         | i                    |
| Thought and adjustment disorders  |              | i              | i                 | i                  | i                     | i                         | i                    |
| PTSD  |              | i              | i                 | i                  | i                     | i                         | i                    |
| Schizophrenia   |              |                | i                 |                    |                       |                           | i                    |
| Other Psychoses   |              | i              | i                 | i                  | i                     | i                         | i                    |
| Other   |              | i              | i                 | i                  | i                     | i                         | i                    |
| 1a. Mental Health Conditions (Indicators/emerging traits)   | Age of Onset | Past Treatment | Current Condition | Treatment Received | Medication Prescribed | Compliance with Treatment | Condition Now Stable |
| <input type="checkbox"/> No Conditions<br><input type="checkbox"/> Conditions (Provide Details Below) |              |                |                   |                    |                       |                           |                      |
| Depression or other Affective Disorder  |              | i              | i                 | i                  | i                     | i                         | i                    |
| Anxiety Disorder  |              | i              | i                 | i                  | i                     | i                         | i                    |
| Bi-Polar Disorder   |              | i              | i                 | i                  | i                     | i                         | i                    |
| Personality disorder (Borderline)   |              | i              | i                 | i                  | i                     | i                         | i                    |
| Thought and adjustment disorders  |              | i              | i                 | i                  | i                     | i                         | i                    |
| PTSD  |              | i              | i                 | i                  | i                     | i                         | i                    |
| Schizophrenia   |              | i              | i                 | i                  | i                     | i                         | i                    |
| Other Psychoses   |              | i              | i                 | i                  | i                     | i                         | i                    |
| Other   |              | i              | i                 | i                  | i                     | i                         | i                    |

| 2. Abuse<br>• Check all that apply   |  | None  | Perpetrated by a parent/stepparent                           | Perpetrated by other adult  | Currently  |   |
|--|--|---|--|---|--|---|
| Physical Abuse   |  | i   | i  | i   | i  |   |
| Sexual Abuse   |  | i   | i  | i   | i  |   |
| Emotional Abuse  |  | i   | i  | i   | i  |   |
| Bullying, (by peer? 0. No 1. Yes)  |  | i   | i  | i   | i  |   |
| 3. Other mental health indicators:<br>• Check all that apply   |  | <input type="checkbox"/> Non-suicidal self-injurious behavior<br><input type="checkbox"/> Eating disorders<br><input type="checkbox"/> Complicated grief      |  | <input type="checkbox"/> Other traumatic events<br><input type="checkbox"/> Somatization<br><input type="checkbox"/> Other  |  |   |
| 4. Homicidal Ideation (Attempts or has thoughts to seriously harm others):   |  |   | <input type="radio"/> No indications                         | <input type="radio"/> Indications   |  |   |
| 5. Suicidal Ideation (Attempts or has thoughts to end life):   |  |   | <input type="radio"/> No indications                         | <input type="radio"/> Suicidal thoughts<br><input type="radio"/> Suicide attempt  |  |   |
| 6. Sexual Vulnerability: Indications that the youth is being sexually exploited or being taken advantage of, including prostitution.                                 |  |   | <input type="radio"/> No indications                         | <input type="radio"/> Yes   |  |   |
| 6a. Sexual Aggression: Indications of aggressive sex, sex for power, sex with younger children, voyeurism, exposure, etc.<br>/*file based and score for males only*/ |  |   | <input type="radio"/> No indications                         | <input type="radio"/> Yes   |  |   |
| 7. Physical health concerns:<br>• Check all that apply   |  | <input type="checkbox"/> - Physical condition/diagnosis<br><input type="checkbox"/> - Nutrition problems<br><input type="checkbox"/> - Pregnancy, miscarriage |  | <input type="checkbox"/> - Sexually Transmitted Disease<br><input type="checkbox"/> - Sexually active without contraception<br><input type="checkbox"/> - Other _____<br><input type="checkbox"/> - None of the above |  |   |
| 8. Motivation to address mental / physical health risk (e.g., willingness to seek help or comply with treatment)   |  | ● ● ●<br>Uncooperative or unwilling to work on positive change  | ● ●<br>Recognizes need to change but not motivated to change | ● 0<br>Mental health issues are not a problem – no need for change  | ● +<br>Is cooperative or taking steps toward positive change | ● ● ●<br>Actively committed and working on change |

**5 Substance Use**

► *"Disruption of function" involves problems in any one of these four life areas: school/employment, family conflict, peer relationships, or health (Disrupted functioning usually indicates that treatment is warranted – refer for further assessment by a qualified professional).*

*Alcohol/Drugs contributes to behavior means a pattern where use almost always precipitates the commission of crime or the need to support a substance use habit precipitates crime.*

*For initial assessment, use the prior 3-month period as a general frame of reference for completing the substance use section. For youth in custody, use the 3-month period prior to incarceration.*

| 1. Alcohol and Drug Use<br><input type="checkbox"/> Alcohol/Drug Use<br><input type="checkbox"/> No Alcohol/Drug Use | Ever Used                | Times used before current conviction or in last 3 months: |                       |                       |           |          | Age at 1 <sup>st</sup> Use (-) | Use Disrupts Functioning (-) | Use Contributes to Criminal Behavior (-) | Indication of use while in custody (if applicable) (-) | Attempts to cut back (+) |
|--|--------------------------|---|-----------------------|-----------------------|-----------|----------|--------------------------------|------------------------------|--|--|--------------------------|
|  |                          | Daily (-)   | 3-5 days per week (+) | 1-2 days per week (+) | Fewer (0) | None (0) |                                |                              |  |  |                          |
| Alcohol  | <input type="checkbox"/> | i   | i                     | i                     | i         | i        |                                | <input type="checkbox"/>     | <input type="checkbox"/>                 | <input type="checkbox"/>                               | <input type="checkbox"/> |
| Marijuana  | <input type="checkbox"/> | i   | i                     | i                     | i         | i        |                                | <input type="checkbox"/>     | <input type="checkbox"/>                 | <input type="checkbox"/>                               | <input type="checkbox"/> |
| Cocaine/crack  | <input type="checkbox"/> | i   | i                     | i                     | i         | i        |                                | <input type="checkbox"/>     | <input type="checkbox"/>                 | <input type="checkbox"/>                               | <input type="checkbox"/> |
| Ecstasy or other club drugs  | <input type="checkbox"/> | i   | i                     | i                     | i         | i        |                                | <input type="checkbox"/>     | <input type="checkbox"/>                 | <input type="checkbox"/>                               | <input type="checkbox"/> |
| Heroin   | <input type="checkbox"/> | i   | i                     | i                     | i         | i        |                                | <input type="checkbox"/>     | <input type="checkbox"/>                 | <input type="checkbox"/>                               | <input type="checkbox"/> |
| Hallucinogens (LSD, Acid)  | <input type="checkbox"/> | i   | i                     | i                     | i         | i        |                                | <input type="checkbox"/>     | <input type="checkbox"/>                 | <input type="checkbox"/>                               | <input type="checkbox"/> |
| Inhalants /huffing   | <input type="checkbox"/> | i   | i                     | i                     | i         | i        |                                | <input type="checkbox"/>     | <input type="checkbox"/>                 | <input type="checkbox"/>                               | <input type="checkbox"/> |
| Amphetamines (Speed)   | <input type="checkbox"/> | i   | i                     | i                     | i         | i        |                                | <input type="checkbox"/>     | <input type="checkbox"/>                 | <input type="checkbox"/>                               | <input type="checkbox"/> |
| Methamphetamine  | <input type="checkbox"/> | i   | i                     | i                     | i         | i        |                                | <input type="checkbox"/>     | <input type="checkbox"/>                 | <input type="checkbox"/>                               | <input type="checkbox"/> |
| Prescription drug misuse   | <input type="checkbox"/> | i   | i                     | i                     | i         | i        |                                | <input type="checkbox"/>     | <input type="checkbox"/>                 | <input type="checkbox"/>                               | <input type="checkbox"/> |
| Other  | <input type="checkbox"/> | i   | i                     | i                     | i         | i        |                                | <input type="checkbox"/>     | <input type="checkbox"/>                 | <input type="checkbox"/>                               | <input type="checkbox"/> |

2. Previous substance abuse treatment:  N/A No problem  Yes  No

3. Primary motivation for use:  N/A No Problem  Coping with trauma  
 Peer pressure  Physical addiction  
 Coping with stress  Self-medicating  
 Other

| 4. Motivation to address substance abuse risk (e.g., participation in services, goal setting, desire to change, etc.) | ● ---   | ● --  | ● 0  | ● +   | ● ++                                     |
|---|---|---|--|---|--|
|   | Uncooperative or unwilling to work on positive change | Recognizes need to change but not motivated to change | Substance abuse not a problem – no need for change | Is cooperative or taking steps toward positive change | Actively committed and working on change |

| <b>6 School</b>   |  |   |                          |                                    |     |      |                                  |   |   |                          |                                    |
|---|--|---|--------------------------|------------------------------------|-----|------|----------------------------------|---|---|--------------------------|------------------------------------|
| <i>Complete this section based on information from the interview, school records, contacts with the school.</i>   |  |   |                          |                                    |     |      |                                  |   |   |                          |                                    |
| <b>1. Youth's current school enrollment status, regardless of attendance:</b> If the youth is in home school as a result of being expelled or dropping out, check the expelled or dropped out box. Otherwise, check enrolled if in home school. | <input type="radio"/> Graduated, GED<br><input type="radio"/> Enrolled full-time<br><input type="radio"/> Enrolled part-time<br><input type="radio"/> Dropped out<br><input type="radio"/> Suspended<br><input type="radio"/> Expelled<br><input type="radio"/> Not Applicable   |   |                          |                                    |     |      |                                  |   |   |                          |                                    |
| <b>2. Youth's attendance in the last 3 months of school:</b> Full-day absence means missing majority of classes. Partial-day absence means attending the majority of classes and missing the minority.  | <input type="radio"/> + Attends regularly (at least 90% of time)<br><input type="radio"/> 0 Some partial-day unexcused absences<br><input type="radio"/> - Some full-day unexcused absences<br><input type="radio"/> - Five or more full-day unexcused absences per quarter<br><input type="radio"/> Not Applicable  |   |                          |                                    |     |      |                                  |   |   |                          |                                    |
| <b>3. Youth's conduct in the last 3 months of school.</b>   | <input type="radio"/> + Positive behavioral adjustment<br><input type="radio"/> 0 No problems reported<br><input type="radio"/> - Infractions reported<br><input type="radio"/> - Intervention by school administration (calls to parents, principal or superintendent involvement, hearing)<br><input type="radio"/> - Police reports filed by school<br><input type="radio"/> Not Applicable   |   |                          |                                    |     |      |                                  |   |   |                          |                                    |
| <b>4. Youth's academic performance in the last 3 months of school:</b>  | <input type="radio"/> + B+ or above<br><input type="radio"/> + C or better<br><input type="radio"/> - C- or lower<br><input type="radio"/> - Failing some classes<br><input type="radio"/> - Failing most classes<br><input type="radio"/> Not Applicable  |   |                          |                                    |     |      |                                  |   |   |                          |                                    |
| <b>5. Youth's current school conduct:</b>   | <input type="radio"/> 0 Consistent, stable<br><input type="radio"/> + Improving<br><input type="radio"/> - Worsening<br><input type="radio"/> Not Applicable   |   |                          |                                    |     |      |                                  |   |   |                          |                                    |
| <b>6. Youth's current academic performance:</b>   | <input type="radio"/> 0 Consistent, stable<br><input type="radio"/> + Improving<br><input type="radio"/> - Worsening<br><input type="radio"/> Not Applicable   |   |                          |                                    |     |      |                                  |   |   |                          |                                    |
| <b>7. IF youth is a special education student or has been found to have a learning, behavioral, or other disability; or has a formal IEP:</b> IEP – individualized education plan • Check all that apply  | <input type="checkbox"/> No Special Education Status<br><input type="checkbox"/> - Learning<br><input type="checkbox"/> - Behavioral<br><input type="checkbox"/> - Developmentally delayed<br><input type="checkbox"/> - (ADHD/ADD)<br><input type="checkbox"/> - Other:   |   |                          |                                    |     |      |                                  |   |   |                          |                                    |
| <b>8. Youth believes receiving an education is beneficial to him or her:</b>  | <input type="radio"/> + Believes<br><input type="radio"/> 0 Somewhat believes<br><input type="radio"/> - Does not believe<br><input type="radio"/> Not Applicable  |   |                          |                                    |     |      |                                  |   |   |                          |                                    |
| <b>9. Youth believes school provides a supportive and encouraging environment for him or her:</b>   | <input type="radio"/> Believes<br><input type="radio"/> Somewhat believes<br><input type="radio"/> Does not believe<br><input type="radio"/> Not Applicable  |   |                          |                                    |     |      |                                  |   |   |                          |                                    |
| <b>10. Total number of out-of-school suspensions in the last 2 years:</b> Enter the number up to 10; if none enter 0.   | <b>Number of out-of-school suspensions</b>   |   |                          |                                    |     |      |                                  |   |   |                          |                                    |
| <b>Total number of in-school suspensions in the last 2 years:</b> Enter the number up to 10; if none enter 0.   | <b>Number of in-school suspensions</b>   |   |                          |                                    |     |      |                                  |   |   |                          |                                    |
| <b>Total number of expulsions since the first grade:</b> Enter the number up to 10; if none enter 0   | <b>Number of expulsions</b>  |   |                          |                                    |     |      |                                  |   |   |                          |                                    |
| <b>11. Age at first expulsion:</b> Enter 0 if never expelled.   | <b>Age at first expulsion</b>  |   |                          |                                    |     |      |                                  |   |   |                          |                                    |
| <b>12. Youth's involvement in school activities during most recent school year:</b> School leadership; social service clubs; performing arts, art; athletics; other extracurricular.  | <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="background-color: black; color: white;">● --</td> <td style="background-color: black; color: white;">● -</td> <td style="background-color: black; color: white;">● 0</td> <td style="background-color: black; color: white;">● +</td> <td style="background-color: black; color: white;">● ++</td> </tr> <tr> <td>No interest in school activities</td> <td>No involvement and little interest in school activities</td> <td>Interested but not involved in any activities</td> <td>Involved in one activity</td> <td>Involved in two or more activities</td> </tr> </table> | ● --  | ● -                      | ● 0                                | ● + | ● ++ | No interest in school activities | No involvement and little interest in school activities | Interested but not involved in any activities | Involved in one activity | Involved in two or more activities |
| ● --  | ● -  | ● 0   | ● +                      | ● ++                               |     |      |                                  |   |   |                          |                                    |
| No interest in school activities  | No involvement and little interest in school activities  | Interested but not involved in any activities | Involved in one activity | Involved in two or more activities |     |      |                                  |   |   |                          |                                    |

|  |                                   |  |  |  |  |
|--|-----------------------------------|--|--|--|--|
| 13. Teachers/staff/coaches youth likes or feels comfortable talking with: Enter the number of adults; if none enter 0. | Names:                            |  |  |  |  |
|  | Number of teachers/staff/coaches: |  |  |  |  |

|  |   |   |   |   |  |
|--|---|---|---|---|--|
| 14. Motivation to address school risk (e.g., participation in services, goal setting, desire to change etc.) | ● --  | ● -   | ● 0                                       | ● +   | ● ++                                     |
|  | Uncooperative or unwilling to work on positive change | Recognizes need to change but not motivated to change | School not a problem – no need for change | Is cooperative or taking steps toward positive change | Actively committed and working on change |

**7 Attitudes**

|                            |   |  |   |   |   |
|----------------------------|---|--|---|---|---|
| 1. Accepts responsibility: | ● --  | ● -  | ● 0   | ● +   | ● ++  |
|                            | Openly accepts or is proud of criminal behavior | Minimizes, denies, justifies, excuses or blames others | Indicates some awareness of the need to accept responsibility | Recognizes that he/she must accept responsibility | Voluntarily accepts full responsibility for criminal behavior |

|                           |   |  |  |  |   |
|---------------------------|---|--|--|--|---|
| 2. Law-abiding attitudes: | ● --  | ● -  | ● 0  | ● +  | ● ++  |
|                           | Openly admits unwillingness to demonstrate law-abiding behavior | Feels law-abiding behavior does not apply to him/her | Expresses neutral attitude toward law-abiding behavior | Expresses a desire to live in a law-abiding manner | Clearly positive commitment toward law-abiding behavior |

|  |  |  |   |  |  |
|--|--|--|---|--|--|
| 3. Attitudes toward the criminal justice system (e.g., courts, police, corrections): | ● --   | ● -  | ● 0   | ● +  | ● ++   |
|  | Views all criminal justice authorities with contempt | Expresses resentment toward criminal justice authorities | Expresses neutral attitude toward criminal justice system | Appreciates the role of criminal justice authorities | Indicates respect for the role of criminal justice authorities |

|                                    |   |                                 |   |   |   |
|------------------------------------|---|---------------------------------|---|---|---|
| 4. Understands impact of behavior: | ● --  | ● -                             | ● 0   | ● +   | ● ++  |
|                                    | Total lack of empathy for harm caused to others (e.g., callous) | Minimizes or denies harm caused | Does not understand or fully appreciate effects on others | Indicates awareness that harm has been caused | Fully understands the nature of harm caused to others |

|  |                     |                               |                            |                          |                             |
|--|---------------------|-------------------------------|----------------------------|--------------------------|-----------------------------|
| 5. Attitude when engaged in antisocial/criminal act(s) | ● --                | ● -                           | ● 0                        | ● +                      | ● ++                        |
|  | Confident, or brags | Hyper, excited, or stimulated | Unconcerned or indifferent | Uncertain, or indecisive | Nervous, afraid, or worried |

|                                   |                                     |   |   |                                     |   |
|-----------------------------------|-------------------------------------|---|---|-------------------------------------|---|
| 6. Respect for authority figures: | ● --                                | ● -                                     | ● 0   | ● +                                 | ● ++  |
|                                   | Views all authorities with contempt | Expresses resentment toward authorities | Expresses neutral attitude toward authorities | Appreciates the role of authorities | Indicates respect for the role of authorities |

|                                |                          |                                    |   |                                   |   |
|--------------------------------|--------------------------|------------------------------------|---|-----------------------------------|---|
| 7. Willingness to make amends: | ■ --                     | ■ -                                | ■ 0                                     | ■ +                               | ■ ++                                      |
|                                | Unwilling to make amends | Non-committal toward making amends | Willing to cooperate with making amends | Indicates a desire to make amends | Eagerly indicates plans for making amends |

|                     | ● --  | ● -   | ● 0   | ● +   | ● ++                                  |
|---------------------|---|---|---|---|---------------------------------------|
| <b>8. Optimism:</b> | Expresses profound sense of hopelessness regarding the future | Believes little matters because his/her future will not be bright | Believes some things matter and he/she has a future | Looks forward to the future with anticipation | Genuinely optimistic about the future |

|  | ● --  | ● -   | ● 0  | ● +   | ● ++                                     |
|--|---|---|--|---|--|
| <b>9. Motivation to address attitudes risk</b> (e.g., willingness to change) | Uncooperative or unwilling to work on positive change | Recognizes need to change but not motivated to change | Attitudes not a problem – no need for change | Is cooperative or taking steps toward positive change | Actively committed and working on change |

**8 Social/Cognitive Skills**

|                            | ● --   | ● -   | ● 0  | ● +  | ● ++   |
|----------------------------|--|---|--|--|--|
| <b>1. Problem-solving:</b> | Cannot identify problems or generate solutions | Sometimes identifies problems but not solutions | Can identify or describe problem behaviors or situations | Can generate different solutions to problems | Can successfully apply appropriate solutions to problems |

|                                   | ● --  | ● -  | ● 0  | ● +   | ● ++   |
|-----------------------------------|---|--|--|---|--|
| <b>2. Consequential thinking:</b> | Does not understand there are consequences of actions | Sometimes confused about consequences of actions | Understands there are good and bad consequences of actions | Can identify specific consequences of his/her actions | Acts to obtain good and avoid bad consequences |

|                                 | ● --   | ● -  | ● 0  | ● +   | ● ++   |
|---------------------------------|--|--|--|---|--|
| <b>3. Relationships skills:</b> | Inability to form mutually rewarding relationships | Has difficulty establishing mutually rewarding relationships | Recognizes the need to nurture healthy relationships | Demonstrates some ability to form mutually rewarding relationship | Demonstrates capacity to form healthy and mutually rewarding relationships |

|                                | ● --   | ● -  | ● 0   | ● +   | ● ++  |
|--------------------------------|--|--|---|---|---|
| <b>4. Expression of needs:</b> | Cannot express needs to others without an element of interpersonal conflict or lack of clarity | Has some difficulty in expressing needs and feelings effectively | Recognizes the need to develop interpersonal skills | Can sometimes express needs and feelings in an assertive, non-confrontational way | Can appropriately express needs and feelings in an assertive, non-confrontational way |

|                                      | ● --   | ● -   | ● 0   | ● +                                      | ● ++   |
|--------------------------------------|--|---|---|--|--|
| <b>5. Social perspective-taking:</b> | Unwilling to recognize there can be other points of view | Difficulty understanding there are other points of view | Can reason there are two sides to a situation | Tries to understand other points of view | Can accept other points of view without necessarily agreeing |

|                            | ● --  | ● -   | ● 0  | ● +                                 | ● ++   |
|----------------------------|---|---|--|-------------------------------------|--|
| <b>6. Trust in others:</b> | Unable to trust others or always suspicious of attempts to help | Often suspicious of help by others or cannot recognize appropriate help | Recognizes that some people can be helpful | Can sometimes trust and accept help | Appropriately trusts others and accepts help |

|  |  |  |  |  |   |
|--|--|--|--|--|---|
| <b>7. Emotional expression:</b>  | ● --<br>Unable to cope with unpleasant emotions (e.g., suppresses, denies, or is explosive)            | ● --<br>Usually unable to cope with unpleasant emotions                      | ● 0<br>Recognizes that emotions can be expressed safely  | ● +<br>Knows and applies appropriate ways to cope with emotions                              | ● ++<br>Uses appropriate coping strategies to deal with unpleasant emotions                 |
| <b>8. Self-efficacy</b>  | ● --<br>No confidence that he/she can manage problems  | ● --<br>Believes that most problems cannot be managed                        | ● 0<br>Recognizes lack of self-efficacy  | ● +<br>Confident that many problems can be managed   | ● ++<br>Confident in ability to manage problems   |
| <b>9. Goal setting/planning:</b>   | ● --<br>Exhibits no interest or desire to set goals and make plans for the future                      | ● --<br>Lacks skills and motivation for developing realistic goals and plans | ● 0<br>Recognizes the need to plan, but may set unrealistic plans                                  | ● +<br>Demonstrates skills in developing realistic goals and plans                           | ● ++<br>Carefully sets out realistic goals and plans and takes active steps to achieve them |
| <b>10. Loss of control over delinquent/criminal behavior /*new item*/</b>  | ● --<br>Believes problem behavior is completely out of his or her control                              | ● --<br>Believes that most problem behavior cannot be controlled             | ● 0<br>Recognizes that some problem behavior is controllable                                       | ● +<br>Strives for some control over own behaviour   | ● ++<br>Recognizes problem behavior is controllable and accepts full responsibility         |
| <b>11. Interpersonal skills /*new item*/</b>                               | ● --<br>Cannot express needs to others without an element of interpersonal conflict or lack of clarity | ● --<br>Has some difficulty in expressing needs and feelings effectively     | ● 0<br>Recognizes the need to nurture positive interpersonal relations with others                 | ● +<br>Can appropriately express needs and feelings in an assertive, non-confrontational way | ● ++<br>Demonstrates social appeal through positive interpersonal skills                    |
| <b>12. Impulse control skills to avoid getting in trouble /*new item*/</b> | ● --<br>Cannot identify Triggers that cause problem behaviours   | ● --<br>Usually fails identify triggers                                      | ● 0<br>Can identify triggers (e.g. persons, events, situations, thoughts, emotions, physical cues) | ● +<br>Knows some self-control techniques to respond to triggers                             | ● ++<br>Uses self-control techniques to avoid trouble                                       |
| <b>13. Motivation to address skills risk (e.g., willingness to change)</b> | ● --<br>Uncooperative or unwilling to work on positive change  | ● --<br>Recognizes need to change but not motivated to change                | ● 0<br>Skills not a problem – no need for change   | ● +<br>Is cooperative or taking steps toward positive change                                 | ● ++<br>Actively committed and working on change  |

**9 Free Time and Employment**

- 1. History of employment:** (Exclude odd jobs or babysitting unless a regular paid job)  
 • Check all that apply.
- |  |   |
|--|---|
| <input type="checkbox"/> + Currently employed          | <input type="checkbox"/> - Fired or quit because of poor performance                    |
| <input type="checkbox"/> 0 Never employed              | <input type="checkbox"/> - Fired or quit because of conflict with employer or coworkers |
| <input type="checkbox"/> + Prior successful employment |   |

▶ Complete following section only if the youth has ever been employed. Enter 0 for items 2-4 if the items are non-applicable.

|  |                 |  |
|--|-----------------|--|
| <b>2. Total number of times youth has been employed:</b> | Number of times |  |
|--|-----------------|--|

|  |                 |  |
|--|-----------------|--|
| <b>3. Number of weeks of longest period of employment:</b> | Number of weeks |  |
|--|-----------------|--|

|  |                  |  |
|--|------------------|--|
| <b>4. Positive personal relationship(s) with current employer(s) or adult coworker(s):</b> | Number of adults |  |
|--|------------------|--|

|   |   |   |
|---|---|---|
| <b>5. Structured recreational activities:</b> Youth participates in structured and supervised pro-social community activities such as religious group/church, community group, cultural group, club, athletics, or other community activity (exclude activities already counted in the School section). | <input type="radio"/> + Involved in two or more activities<br><input type="radio"/> + Involved in one activity<br><input type="radio"/> 0 Interested but not involved | <input type="radio"/> 0 Interested but not involved<br><input type="radio"/> - Not interested in any activities |
|---|---|---|

|  |   |  |
|--|---|--|
| <b>6. Unstructured recreational activities:</b> Youth engages in positively influencing activities – may include reading, artwork, music, computers, hobbies, etc. | <input type="radio"/> + Involved in two or more activities<br><input type="radio"/> + Involved in one activity<br><input type="radio"/> 0 Interested but not involved | <input type="radio"/> - Not interested in any activities |
|--|---|--|

|   |  |   |
|---|--|---|
| <b>7. Challenging/exciting hobbies/activities:</b> Youth identifies a hobby or activity that is or could be especially challenging, intense, or exciting. | <input type="radio"/> + Identifies hobby(s) or activity (s) that are currently challenging/exciting<br><input type="radio"/> + Can identify hobby(s) or activity (s) that would be challenging/ exciting | <input type="radio"/> - Cannot identify hobby(s) or activity (s) that would be challenging/exciting |
|---|--|---|

|   |   |  |
|---|---|--|
| <b>8. Decline in interest in positive leisure pursuits:</b> Decline in interest during the past year due to involvement in negatively influencing activities (e.g., substance abuse, gang involvement, delinquent peer groups, illegal activity): | <input type="radio"/> 0 No change, or never experienced positive leisure pursuits<br><input type="radio"/> - Decline in interest in positive leisure pursuits | <input type="radio"/> + Recent increase in interest in positive leisure pursuits |
|---|---|--|

|  |   |   |   |   |  |
|--|---|---|---|---|--|
| <b>9. Motivation to address free time risk</b> (e.g., participation in services, goal setting, desire to change, etc.) | <input type="radio"/> --                              | <input type="radio"/> -                               | <input type="radio"/> 0                         | <input type="radio"/> +                               | <input type="radio"/> ++                 |
|  | Uncooperative or unwilling to work on positive change | Recognizes need to change but not motivated to change | Free time is not a problem – no need for change | Is cooperative or taking steps toward positive change | Actively committed and working on change |



|   |  |  |
|---|--|--|
| <b>7. Belief in use of verbal aggression to resolve a disagreement or conflict:</b> (e.g., yelling and verbal intimidation) | <input type="radio"/> + Believes verbal aggression is rarely appropriate or necessary    | <input type="radio"/> - Believes verbal aggression is often appropriate or necessary |
|   | <input type="radio"/> - Believes verbal aggression is sometimes appropriate or necessary |  |

|  |   |   |  |   |  |
|--|---|---|--|---|--|
| <b>8. Motivation to address violence and aggression risk:</b> (participation in services, goal setting, desire to change etc.) | ● --  | ● -   | ● 0  | ● +   | ● ++                                     |
|  | Uncooperative or unwilling to work on positive change | Recognizes need to change but not motivated to change | Aggression is not a problem – no need for change | Is cooperative or taking steps toward positive change | Actively committed and working on change |

**Notes:**

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## Appendix F: Summary of Differences Between YASI Models

| Gender Informed YASI (YASI-GI)  | Original YASI   |
|---|---|
| <b><u>FAMILY</u></b>  | <b><u>FAMILY</u></b>  |
| ( <b>yasfam_living</b> ) Youth's current living arrangements<br>(ADDED response options):<br>-romantic partner [but at parent's house]<br>-romantic partner [but not at parent's house]   | ( <b>yasfam_living</b> ) Youth's current living arrangements<br><br>X <sup>a</sup><br>X |
| ( <b>yasfam1a – 3e</b> ) If youth is a parent...<br>(ADDED question)<br>-youth has custody<br>-other parent or family has custody<br>-foster or agency custody  | X   |
| ( <b>yasfam16</b> ) Youth's attachment to children<br>(ADDED question)<br>-high degree of conflict or absence of attachment<br>-lacks interest or difficulty establishing attachment<br>-minimally rewarding relationship with children (or no children)<br>-rewarding relationships with children<br>-highly rewarding relationships | X   |
| ( <b>yasfam17</b> ) Youth's parenting skills<br>(ADDED question)<br>-low interest in parenting role or major parenting skill deficits are recognized or evidence<br>-some level of parenting skill deficit expressed or evident   | X   |

| <b>Gender Informed YASI (YASI-GI)</b>   | <b>Original YASI</b>  |
|---|---|
| -parenting skills are not a major issue/deficit (or no children)<br>-parenting skills appear adequate and non-problematic<br>-confident and proficient parenting skills are evident   |   |
| <b>(yasfam18)</b> Motivation to address risk in family<br>(ADDED question)<br>-uncooperative or unwilling to work on positive change<br>-recognizes need to change but not motivated to change<br>-family not a problem – no need for change or NA<br>-is cooperative or taking steps toward positive change<br>-actively committed and working on change | X   |
| <b><u>SCHOOL</u></b>  | <b><u>SCHOOL</u></b>  |
| <b>(yased12)</b> Youth's involvement in school activities during most recent school year<br>(changed scale):<br>-2 = No interest in school activities<br>-1 = No involvement and little interest in school activities<br>0 = Interested by not involved in any activities<br>1 = Involved in one activity<br>2 = Involved in two or more activities       | <b>(yased12)</b> Youth's involvement in school activities during most recent school year<br><br>No interest in school activities<br>X<br>Interested by not involved in any activities<br>Involved in one activity<br>Involved in two or more activities |
| <b>(yased14)</b> Motivation to address school risk<br>(ADDED question)<br>-uncooperative or unwilling to work on positive change<br>-recognizes need to change but not motivated to change<br>-school not a problem – no need for change  | X   |

| <b>Gender Informed YASI (YASI-GI)</b>   | <b>Original YASI</b>                                  |
|---|---|
| -is cooperative or taking steps toward positive change<br>-actively committed and working on change   |   |
| <b><u>SOCIAL NETWORKS (COMMUNITY &amp; PEERS)</u></b>   | <b><u>SOCIAL NETWORKS (COMMUNITY &amp; PEERS)</u></b> |
| (yassoc9) Intimate relationships<br>(ADDED question)<br>-high degrees of instability and conflict, youth expresses high dissatisfaction<br>-some conflict and dissatisfaction evident in the relationship<br>-minimal satisfaction in relationship (or no current relationship)<br>-stability of relationship evident, youth expresses satisfaction<br>-high degree of stability, satisfaction and commitment to the relationship | X   |
| (yassoc10a-h) Relationship risk factors<br>(ADDED question)<br>-victim of domestic violence<br>-victimization with current or recent ex-partner<br>-ongoing conflict with ex-partner<br>-expresses safety and protection issues with regard to spouse<br>-perpetrated domestic violence<br>-partner with anti-social history<br>-partner has pro-social influence<br>-NA or none of the above                                     | X   |
| (yassoc11) Motivation to address social network risk<br>(ADDED question)<br>-uncooperative or unwilling to work on positive change  | X   |

| <b>Gender Informed YASI (YASI-GI)</b>  | <b>Original YASI</b>   |
|--|--|
| -recognizes need to change but not motivated to change<br>-social influences not a problem – no need for change<br>-is cooperative or taking steps toward positive change<br>-actively committed and working on change |  |
| <b><u>SUBSTANCE USE</u></b>  | <b><u>SUBSTANCE USE</u></b>  |
| <b>(yassub1_1b – 11b)</b> Time used [substance] before current conviction in last 3 months<br>0 = Daily<br>1 = 3 – 5 days per week<br>2 = 1-2 days per week<br>3 = Fewer<br>4 = None                                   | <b>(yassub1_1b – 11b)</b> Time used [substance] before current conviction in last 3 months<br>Raw number<br>X<br>X<br>X<br>X |
| *Also added Methamphetamine to list of substances  | X  |
| <b>(yassub3)</b> Primary motivation for use<br>(ADDED question)<br>-NA no problem<br>-peer pressure<br>-coping with stress<br>-coping with trauma<br>-physical addiction<br>-self-medicating<br>-other                 | X  |
| <b>yassub4</b> Motivation to address substance abuse risk<br>(ADDED question)  | X  |

| <b>Gender Informed YASI (YASI-GI)</b>   | <b>Original YASI</b>   |
|---|--|
| <ul style="list-style-type: none"> <li>-uncooperative or unwilling to work on positive change</li> <li>-recognizes need to change but not motivated to change</li> <li>-substance abuse not a problem – no need for change</li> <li>-is cooperative or taking steps toward positive change</li> <li>-actively committed to working on change</li> </ul>                                     |  |
| <b><u>MENTAL HEALTH</u></b>   | <b><u>MENTAL HEALTH</u></b>  |
| <p><b>(yasmen1_...)</b> Type of mental disorder<br/>(EXPANDED options):</p> <ul style="list-style-type: none"> <li>-depression or other affective</li> <li>-anxiety disorder</li> <li>-bi-polar disorder</li> <li>-personality disorder (borderline)</li> <li>-thought and adjustment disorders</li> <li>-PTSD</li> <li>-schizophrenia</li> <li>-other psychoses</li> <li>-other</li> </ul> | <p><b>(yasmen1_...)</b> Type of mental disorder</p> <ul style="list-style-type: none"> <li>-other mood disorders</li> <li>X</li> <li>-bipolar</li> <li>X</li> <li>-adjustment disorders</li> <li>X</li> <li>X</li> <li>-psychoses</li> <li>-other</li> </ul> |
| <p><b>(yasmen1_a1 – i1)</b> Age of onset [mental disorder]<br/>(ADDED question)</p>   | X  |
| <p><b>(yasmen2_a1)</b> Physical abuse<br/>(ADDED timeframe question)</p> <ul style="list-style-type: none"> <li>-currently</li> </ul>   | X  |
| <p><b>(yasmen2_a2)</b> Sexual abuse</p>   | X  |

| <b>Gender Informed YASI (YASI-GI)</b>  | <b>Original YASI</b>         |
|--|------------------------------|
| (ADDED timeframe question)<br>-currently   |                              |
| (yasmen2_c1) Emotional abuse<br>(ADDED question)<br>-currently   | X                            |
| (yasmen3a – 3f) Other mental health indicators<br>(ADDED question)<br>-non-suicidal self-injurious behaviour<br>-eating disorders<br>-complicated grief<br>-other traumatic events<br>-somatization<br>-other              | X                            |
| (yasmen6a) Sexual aggression<br>(MODIFIED question)<br>-***score for males only  | (yasmen6a) Sexual aggression |
| (yasmen7a – 7f) Physical health concerns<br>(ADDED question)<br>-physical condition/diagnosis<br>-nutrition problems<br>-pregnancy, miscarriage<br>-sexually transmitted disease<br>-sexually active without contraception | X                            |

| <b>Gender Informed YASI (YASI-GI)</b>   | <b>Original YASI</b>    |
|---|-------------------------|
| -other  |                         |
| <p><b>(yasm8)</b> Motivation to address mental/physical health<br/>(ADDED question)</p> <ul style="list-style-type: none"> <li>-uncooperative or unwilling to work on positive change</li> <li>-recognizes need to change but not motivated to change</li> <li>-mental health issues are not a problem – no need for change</li> <li>-is cooperative or taking steps toward positive change</li> <li>-actively committed and working on change</li> </ul>     | X                       |
| <b><u>ATTITUDES</u></b>   | <b><u>ATTITUDES</u></b> |
| <p><b>(yasatt3)</b> Attitudes towards the CJS<br/>(ADDED question)</p> <ul style="list-style-type: none"> <li>-views all criminal justice authorities with contempt</li> <li>-expresses resentment toward criminal justice authorities</li> <li>-expresses neutral attitude toward criminal justice system</li> <li>-appreciates the role of criminal justice authorities</li> <li>-indicates respect for the role of criminal justice authorities</li> </ul> | X                       |
| <p><b>(yasatt9)</b> Motivation to address attitudes risk</p> <ul style="list-style-type: none"> <li>-uncooperative or unwilling to work on positive change</li> <li>-recognizes need to change not motivated to change</li> <li>-attitudes not a problem – no need for change</li> <li>-is cooperative or taking steps towards positive change</li> <li>-actively committed and working on change</li> </ul>  | X                       |

| <b>Gender Informed YASI (YASI-GI)</b>   | <b>Original YASI</b>                  |
|---|---------------------------------------|
| <b><u>SOCIAL/COGNITIVE SKILLS</u></b>   | <b><u>SOCIAL/COGNITIVE SKILLS</u></b> |
| <p><b>(yasskill3)</b> Relationships skills<br/>(ADDED question)<br/>-inability to form mutually reward relationships<br/>-has difficulty establishing mutually rewarding relationships<br/>-recognizes the need to nurture healthy relationships<br/>-demonstrates some ability to form mutually rewarding relationships<br/>-demonstrates capacity to form healthy and mutually rewarding relationships</p>  | X                                     |
| <p><b>(yasskill4)</b> Expression of needs<br/>(ADDED question)<br/>-cannot express needs to others without an element of interpersonal conflict or lack of clarity<br/>-has some difficulty in expressing needs and feelings effectively<br/>-recognizes the need to develop interpersonal skills<br/>-can sometimes express needs and feelings in an assertive, non-confrontational way<br/>-can appropriately express needs and feelings in an assertive, non-confrontational way</p> | X                                     |
| <p><b>(yasskill6)</b> Trust in others<br/>(ADDED question)<br/>-unable to trust others or always suspicious of attempts to help<br/>-often suspicious of help by others and cannot recognize appropriate help</p>   | X                                     |

| <b>Gender Informed YASI (YASI-GI)</b>  | <b>Original YASI</b> |
|--|----------------------|
| <ul style="list-style-type: none"> <li>-recognizes that some people can be helpful</li> <li>-can sometimes trust and accept help</li> <li>-appropriately trusts others and accepts help</li> </ul>   |                      |
| <p><b>(yasskill7)</b> Emotional expression<br/>(ADDED question)</p> <ul style="list-style-type: none"> <li>-unable to cope with unpleasant emotions (e.g., suppresses, denies, or is explosive)</li> <li>-usually unable to cope with unpleasant emotions</li> <li>-recognizes that emotions can be expressed safely</li> <li>-knows and applies appropriate ways to cope with emotions</li> <li>-uses appropriate ways to cope with emotions</li> <li>-uses appropriate coping strategies to deal with unpleasant emotions</li> </ul> | X                    |
| <p><b>(yaskill8)</b> Self-efficacy<br/>(ADDED question)</p> <ul style="list-style-type: none"> <li>-no confidence that he/she can manage problems</li> <li>-believes that most problems cannot be managed</li> <li>-recognizes lack of self-efficacy</li> <li>-confident that many problems can be managed</li> <li>-confident in ability to manage problems</li> </ul>  | X                    |
| <p><b>(yasskill13)</b> Motivation to address skills risk<br/>(ADDED question)</p> <ul style="list-style-type: none"> <li>-uncooperative or unwilling to work on positive change</li> <li>-recognizes need to change but not motivated to change</li> <li>-skills not a problem – no need for change</li> <li>-is cooperative or taking steps toward positive change</li> </ul>   | X                    |

| <b>Gender Informed YASI (YASI-GI)</b>   | <b>Original YASI</b>                     |
|---|--|
| -actively committed and working on change   |  |
| <b><u>EMPLOYMENT &amp; FREE TIME</u></b>  | <b><u>EMPLOYMENT &amp; FREE TIME</u></b> |
| (yasemp9) Motivation to address free time risk<br>(ADDED question)<br>Uncooperative or unwilling to work on positive change<br>-recognizes need to change but not motivated to change<br>-free time in not a problem – no need for change<br>-is cooperative or taking steps toward positive change | X  |
| <b><u>VIOLENCE &amp; AGGRESSION</u></b>   | <b><u>VIOLENCE &amp; AGGRESSION</u></b>  |
| (yasviol1) Violence<br>(ADDED indicators)<br>-sexual aggression<br>-domestic violence   | (yasviol1) Violence<br><br>X<br>X        |
| (yasviol3) Anger management skills<br>(ADDED question)  | X  |
| (yasviol4) Frequently in conflict with others<br>(ADDED question)   | X  |
| (yasviol8) Motivation address violence and aggression risk<br>(ADDED question)  | X  |

Note. <sup>a</sup>X indicates item or response option was not included in original YASI.

## Appendix G: Recidivism Coding Manual

|                          |
|--------------------------|
| <b>RECIDIVISM CODING</b> |
|--------------------------|

DOB: \_\_\_\_\_  
           *yyyy-mm-dd*

INDEX\_OFF\_DATE: \_\_\_\_\_ (use n/a if not available)  
                   *yyyy-mm-dd*

INDEX\_ARREST: \_\_\_\_\_ (use n/a if not available)  
                   *yyyy-mm-dd*

INDEX\_CONV\_P: \_\_\_\_\_ (use n/a if not available)  
                   *yyyy-mm-dd*

INDEX\_CONV\_M: \_\_\_\_\_ (use n/a if not available)  
                   *yyyy-mm-dd*

INDEX\_CONV\_C: \_\_\_\_\_ (use n/a if not available)  
                   *yyyy-mm-dd*

INDEX\_CONV\_SOURCE:  Pathways  Ministry  CPIC

INDEX\_OFFENCE:

- |   |  |
|---|--|
| <input type="checkbox"/> 1. 'Homicide and Related' _____          | <input type="checkbox"/> 15. 'Possession Drugs' _____            |
| <input type="checkbox"/> 2. 'Serious Violent' _____               | <input type="checkbox"/> 16. 'Traffic - Criminal Code' _____     |
| <input type="checkbox"/> 3. 'Violent Sexual' _____                | <input type="checkbox"/> 17. 'Administration of Justice' _____   |
| <input type="checkbox"/> 4. 'Break & Enter and Related' _____     | <input type="checkbox"/> 18. 'Impaired Driving' _____            |
| <input type="checkbox"/> 5. 'Non-Violent Sexual' _____            | <input type="checkbox"/> 19. 'Public Order Offences' _____       |
| <input type="checkbox"/> 6. 'Traffic/Import Drugs' _____          | <input type="checkbox"/> 20. 'Other Federal Offences' _____      |
| <input type="checkbox"/> 7. 'Weapons Offences' _____              | <input type="checkbox"/> 21. 'Parole Violations' _____           |
| <input type="checkbox"/> 8. 'Fraud and Related' _____             | <input type="checkbox"/> 22. 'Highway Traffic Act (Prov.)' _____ |
| <input type="checkbox"/> 9. 'Misc. Offences Against Person' _____ | <input type="checkbox"/> 23. 'Liquor Control Act (Prov.)' _____  |
| <input type="checkbox"/> 10. 'Theft/Possession' _____             | <input type="checkbox"/> 24. 'Other Provincial Offences' _____   |
| <input type="checkbox"/> 11. 'Assault and Related' _____          | <input type="checkbox"/> 25. 'Municipal Bylaws' _____            |
| <input type="checkbox"/> 12. 'Arson/Property Damage' _____        | <input type="checkbox"/> 26. 'Unknown' _____                     |
| <input type="checkbox"/> 13. 'Morals Offences' _____              |  |
| <input type="checkbox"/> 14. 'Obstruct Justice' _____             |  |

INTVW\_DATE: \_\_\_\_\_ INTVW\_LOC: \_\_\_\_\_ COMMORCUS:  COMMUNITY  CUSTODY  
*yyyy-mm-dd*

| ADMDATE | ADMREAS | RLSEDATE | RLSEREAS | DEPDATE | DEPREAS |
|---------|---------|----------|----------|---------|---------|
|         |         |          |          |         |         |
|         |         |          |          |         |         |
|         |         |          |          |         |         |
|         |         |          |          |         |         |
|         |         |          |          |         |         |

**TIME AT RISK – TIMELINE**

DATE\_AT\_RISK1: \_\_\_\_\_ NOT\_AT\_RISK1: \_\_\_\_\_  
*yyyy-mm-dd    yyyy-mm-dd*

DATE\_AT\_RISK2: \_\_\_\_\_ NOT\_AT\_RISK2: \_\_\_\_\_  
*yyyy-mm-dd    yyyy-mm-dd*

DATE\_AT\_RISK3: \_\_\_\_\_ NOT\_AT\_RISK3: \_\_\_\_\_  
*yyyy-mm-dd    yyyy-mm-dd*

DATE\_AT\_RISK4: \_\_\_\_\_ NOT\_AT\_RISK4: \_\_\_\_\_  
*yyyy-mm-dd    yyyy-mm-dd*

DATE\_AT\_RISK5: \_\_\_\_\_ NOT\_AT\_RISK5: \_\_\_\_\_  
*yyyy-mm-dd    yyyy-mm-dd*

**RECIDIVISM DATA: New charges must be listed DISPOSED, BAILED, OTHER**CPIC?  No  Yes CPIC\_DATE: \_\_\_\_\_*yyyy-mm-dd*NEWOFF\_STATUS:  Youth  Adult

1st\_NEW\_OFFS:

- (1) Homicide & Related
- (2) Serious violent offences
- (3) Violent sexual offences
- (4) Break/enter & related
- (5) Non-violent sexual offences
- (6) Traffic/import drug offences
- (7) Weapons offences
- (8) Fraud & related offences
- (9) Misc. offences against the person
- (10) Theft/possession offences
- (11) Assault & related offences
- (12) Arson/property offences
- (13) Morals offences
- (14) Obstruction of justice offences
- (15) Drug possession offences
- (16) Criminal code traffic offences
- (17) Administration of justice offences
- (18) Impaired driving offences
- (19) Public order offences
- (20) Other federal offences
- (22) Highway traffic act offences
- (23) Liquor control act offences
- (24) Other provincial offences
- (25) Municipal bylaw offences
- (26) Unknown offences

**CODE FIRST EVENT OF EACH TYPE**VIOL\_RECID:  No  Yes VIOL\_DATE: \_\_\_\_\_*yyyy-mm-dd*GEN\_RECID:  No  Yes GEN\_DATE: \_\_\_\_\_*yyyy-mm-dd*TECH\_RECID:  No  Yes TECH\_DATE: \_\_\_\_\_*yyyy-mm-dd*ANY\_RECID:  No  Yes ANY\_DATE: \_\_\_\_\_*yyyy-mm-dd*

**Appendix H: Interrater Reliability Coding for Recidivism**

| Variable                                | % Agreement<br>Pair 1 (N) | % Agreement<br>Pair 2 (N) | Mean %<br>Agreement | <i>ICC (N)</i> |
|---|---------------------------|---------------------------|---------------------|----------------|
| Date of birth                           | -                         | -                         | -                   | 0.988 (51)     |
| Index offence date                      | -                         | -                         | -                   | 0.999 (52)     |
| Index arrest date                       | -                         | -                         | -                   | 0.999 (43)     |
| Index conviction date (pathways)        | -                         | -                         | -                   | 1.000 (21)     |
| Index conviction date (ministry)        | -                         | -                         | -                   | 0.999 (22)     |
| Index conviction date (CPIC)            | -                         | -                         | -                   | 1.000 (23)     |
| Index offence - homicide & related      | 95.65 (23)                | 100.00 (30)               | 97.83               | -              |
| Index offence - serious violent         | 95.65 (23)                | 90.00 (30)                | 92.83               | -              |
| Index offence - violent sexual          | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Index offence - break, enter, & related | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Index offence - non-violent sexual      | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Index offence - traffic, import drugs   | 100.00 (23)               | 96.67 (30)                | 98.34               | -              |
| Index offence - weapons offences        | 95.65 (23)                | 100.00 (30)               | 97.83               | -              |
| Index offence - fraud & related         | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Index offence - offences against person | 95.65 (23)                | 100.00 (30)               | 97.83               | -              |

| Variable                                     | % Agreement<br>Pair 1 (N) | % Agreement<br>Pair 2 (N) | Mean %<br>Agreement | <i>ICC (N)</i> |
|--|---------------------------|---------------------------|---------------------|----------------|
| Index offence - theft/possession             | 95.65 (23)                | 93.33 (30)                | 94.49               | -              |
| Index offence - assault & related            | 82.60 (23)                | 93.33 (30)                | 87.97               | -              |
| Index offence - arson/property<br>damage     | 95.65 (23)                | 96.67 (30)                | 96.16               | -              |
| Index offence - morals offences              | 95.65 (23)                | 100.00 (30)               | 97.83               | -              |
| Index offence - obstruct justice             | 95.65 (23)                | 93.33 (30)                | 94.49               | -              |
| Index offence - possession drugs             | 100.00 (23)               | 96.67 (30)                | 98.34               | -              |
| Index offence - traffic/criminal code        | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Index offence - administration of<br>justice | 100.00 (23)               | 96.67 (30)                | 98.34               | -              |
| Index offence - impaired driving             | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Index offence - public order<br>offences     | 100.00 (23)               | 96.67 (30)                | 98.34               | -              |
| Index offence - other federal<br>offences    | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Index offence - parole violations            | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |

| Variable                                  | % Agreement<br>Pair 1 (N) | % Agreement<br>Pair 2 (N) | Mean %<br>Agreement | <i>ICC (N)</i> |
|---|---------------------------|---------------------------|---------------------|----------------|
| Index offence - highway traffic act       | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Index offence - liquor control act        | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Index offence - other provincial offences | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Index offence - municipal bylaws          | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Index offence - unknown                   | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Index offence - other offences            | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Community or custody                      | 100.00 (22)               | 100.00 (29)               | 100.00              | -              |
| Recidivism - homicide & related           | 95.65 (23)                | 96.67 (30)                | 96.16               | -              |
| Recidivism - serious violent              | 86.96 (23)                | 90.00 (30)                | 88.48               | -              |
| Recidivism - violent sexual               | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Recidivism - break, enter & related       | 91.30 (23)                | 100.00 (30)               | 95.65               | -              |
| Recidivism - non-violent sexual           | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Recidivism - traffic/import drug          | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |

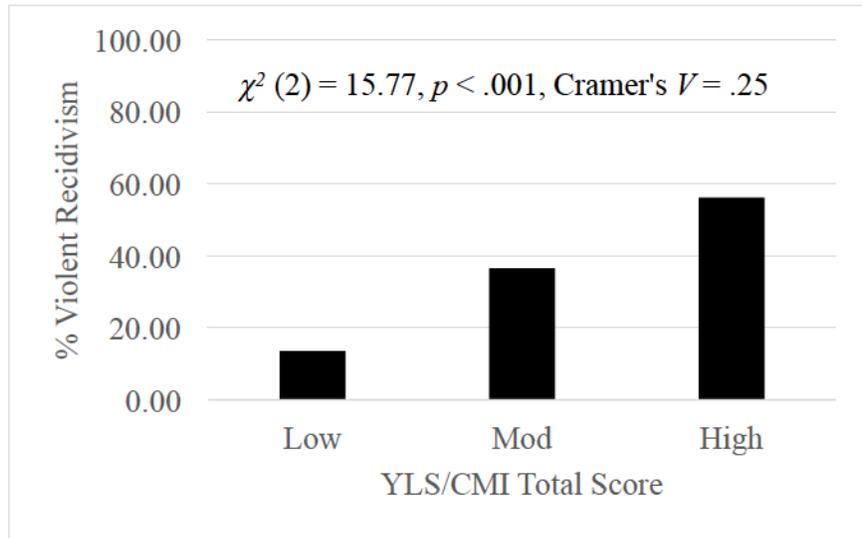
| Variable   | % Agreement<br>Pair 1 (N) | % Agreement<br>Pair 2 (N) | Mean %<br>Agreement | ICC (N) |
|--|---------------------------|---------------------------|---------------------|---------|
| Recidivism - weapons                             | 95.57 (23)                | 100.00 (30)               | 97.79               | -       |
| Recidivism_fraud & related offences              | 100.00 (23)               | 96.67 (30)                | 98.34               | -       |
| Recidivism_misc. offences against<br>person      | 91.30 (23)                | 96.67 (30)                | 93.99               | -       |
| Recidivism_theft/possession<br>offences          | 91.30 (23)                | 93.33 (30)                | 92.32               | -       |
| Recidivism_assault & related                     | 82.61 (23)                | 96.67 (30)                | 89.64               | -       |
| Recidivism_arson/property offences               | 95.65 (23)                | 96.67 (30)                | 96.16               | -       |
| Recidivism_morals offences                       | 100.00 (23)               | 100.00 (30)               | 100.00              | -       |
| Recidivism_obstruction of justice<br>offences    | 91.30 (23)                | 93.33 (30)                | 92.32               | -       |
| Recidivism_drug possession<br>offences           | 100.00 (23)               | 100.00 (30)               | 100.00              | -       |
| Recidivism_criminal code traffic<br>offences     | 100.00 (23)               | 100.00 (30)               | 100.00              | -       |
| Recidivism_administration of justice<br>offences | 95.65 (23)                | 96.67 (30)                | 96.16               | -       |
| Recidivism_impaired driving<br>offences          | 100.00 (23)               | 100.00 (30)               | 100.00              | -       |

| Variable                                   | % Agreement<br>Pair 1 (N) | % Agreement<br>Pair 2 (N) | Mean %<br>Agreement | <i>ICC (N)</i> |
|--|---------------------------|---------------------------|---------------------|----------------|
| Recidivism_public order offences           | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Recidivism_other federal offences          | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Recidivism_highway traffic act<br>offences | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Recidivism_liquor control act<br>offences  | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Recidivism_other provincial<br>offences    | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Recidivism_municipal bylaw<br>offences     | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Recidivism_unknown offences                | 100.00 (23)               | 100.00 (30)               | 100.00              | -              |
| Date at risk 1                             | -                         | -                         | -                   | 0.980 (51)     |
| Date at risk 2                             | -                         | -                         | -                   | 0.969 (19)     |
| Date at risk 3                             | -                         | -                         | -                   | 0.998 (9)      |
| Date at risk 4                             | -                         | -                         | -                   | 0.885 (8)      |
| Date at risk 5                             | -                         | -                         | -                   | 0.685 (5)      |

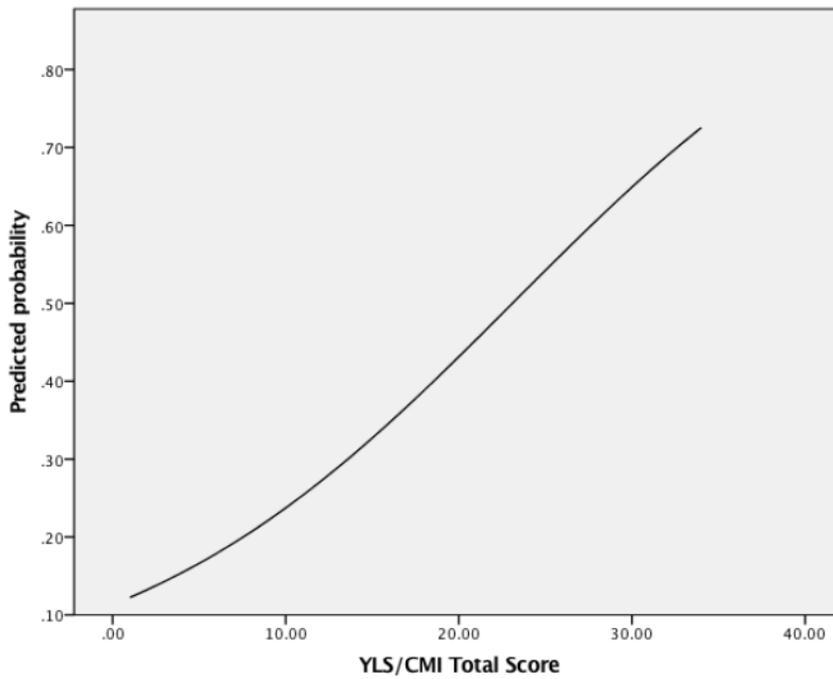
| Variable           | % Agreement<br>Pair 1 (N) | % Agreement<br>Pair 2 (N) | Mean %<br>Agreement | ICC (N)    |
|--------------------|---------------------------|---------------------------|---------------------|------------|
| Date at risk 6     | -                         | -                         | -                   | 1.000 (2)  |
| Date at risk 7     | -                         | -                         | -                   | 1.000 (2)  |
| Date at risk 8     | -                         | -                         | -                   | 1.000 (2)  |
| Not at risk 1      | -                         | -                         | -                   | 0.975 (22) |
| Not at risk 2      | -                         | -                         | -                   | 0.997 (9)  |
| Not at risk 3      | -                         | -                         | -                   | 0.993 (8)  |
| Not at risk 4      | -                         | -                         | -                   | 0.715 (5)  |
| Not at risk 5      | -                         | -                         | -                   | - (1)      |
| Not at risk 6      | -                         | -                         | -                   | 1.000 (1)  |
| Not at risk 7      | -                         | -                         | -                   | 0.996 (2)  |
| Not at risk 8      | -                         | -                         | -                   | - (1)      |
| Violent recidivism | 91.30 (23)                | 90.00 (30)                | 90.65               | -          |
| General recidivism | 95.65 (23)                | 93.33 (30)                | 94.49               | -          |

| Variable                   | % Agreement<br>Pair 1 (N) | % Agreement<br>Pair 2 (N) | Mean %<br>Agreement | <i>ICC (N)</i> |
|----------------------------|---------------------------|---------------------------|---------------------|----------------|
| Technical recidivism       | 95.65 (23)                | 96.67 (30)                | 96.16               | -              |
| Any recidivism             | 95.65 (23)                | 90.00 (30)                | 92.83               | -              |
| Violent (reoffence) date   | -                         | -                         | -                   | 0.819 (12)     |
| General (reoffence) date   | -                         | -                         | -                   | 0.928 (22)     |
| Technical (reoffence) date | -                         | -                         | -                   | 0.938 (21)     |
| Any (reoffence) date       | -                         | -                         | -                   | 0.951 (26)     |

**Appendix I: Calibration of Risk Assessment Measures and Violent Recidivism**



*Figure 15.* Percentage of Violent Recidivists at Each Level of the YLS/CMI Total Score (Total Sample)



*Figure 16.* Predicted Probability of Violent Recidivism and YLS/CMI Total Score (Total Sample)

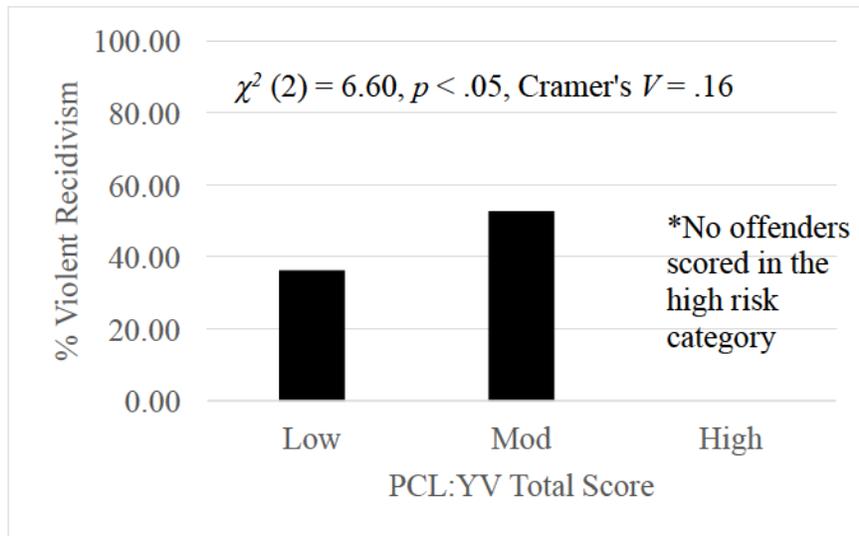


Figure 17. Percentage of Violent Recidivists at Each Level of the PCL:YV Total Score (Total Sample)

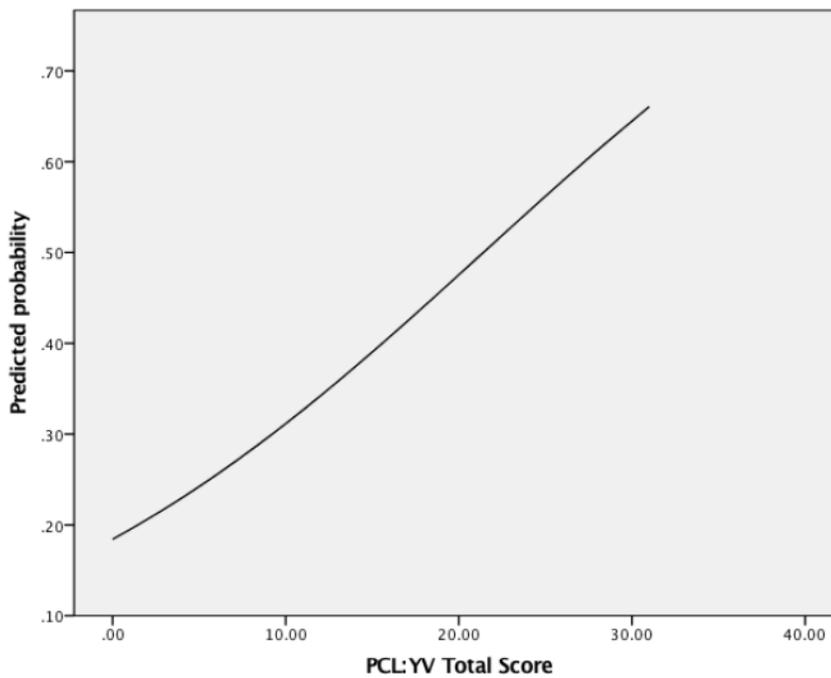


Figure 18. Predicted Probability of Violent Recidivism and PCL:YV Total Score (Total Sample)

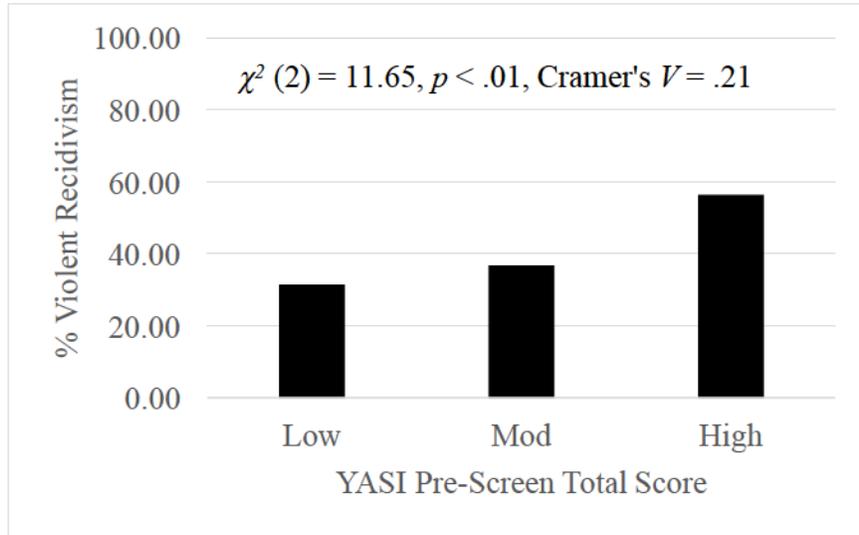


Figure 19. Percentage of Violent Recidivists at Each Level of the YASI Pre-Screen Total Risk Score (Total Sample)

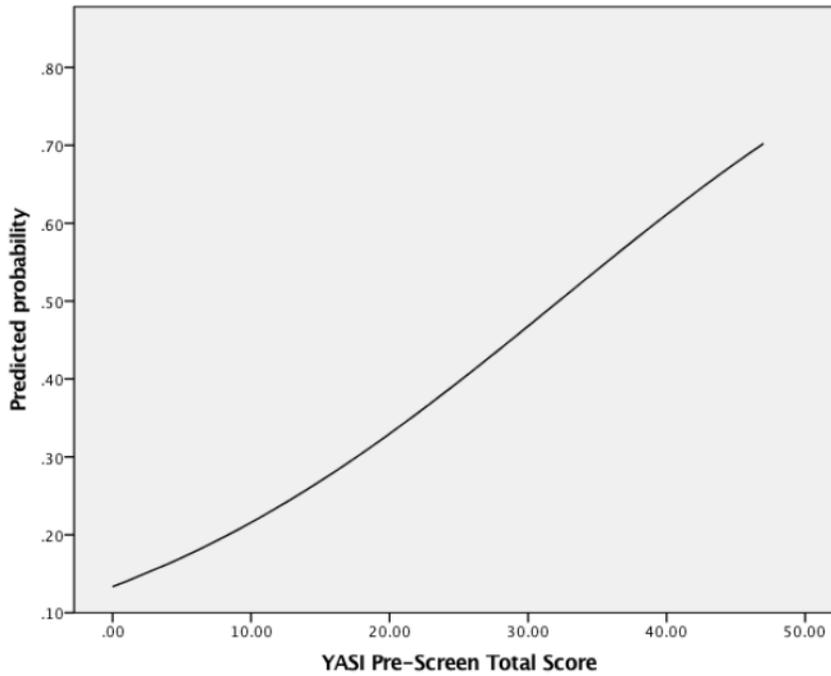


Figure 20. Predicted Probability of Violent Recidivism and YASI Pre-Screen Total Risk Score (Total Sample)

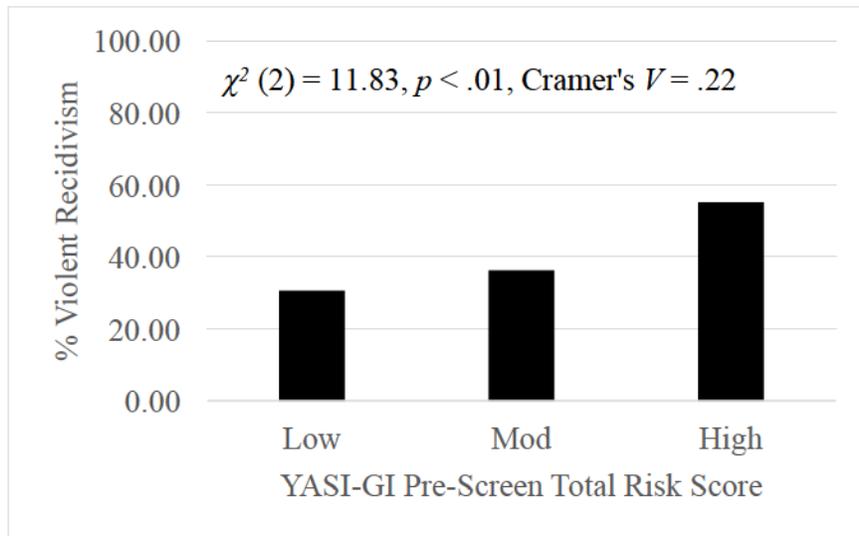


Figure 21. Percentage of Violent Recidivists at Each Level of the YASI-GI Pre-Screen Total Risk Score (Total Sample)

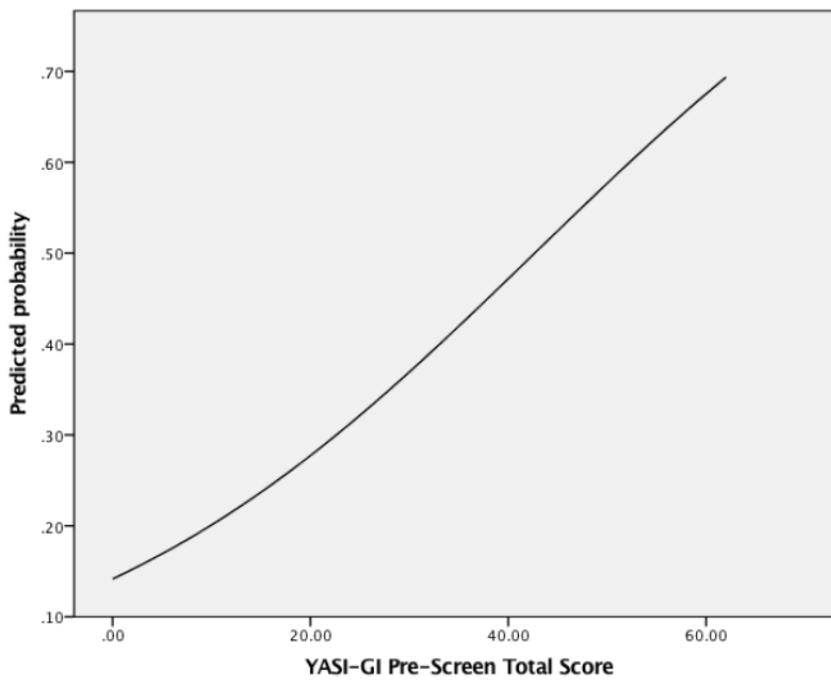


Figure 22. Predicted Probability of Violent Recidivism and YASI-GI Pre-Screen Total Risk Score (Total Sample)

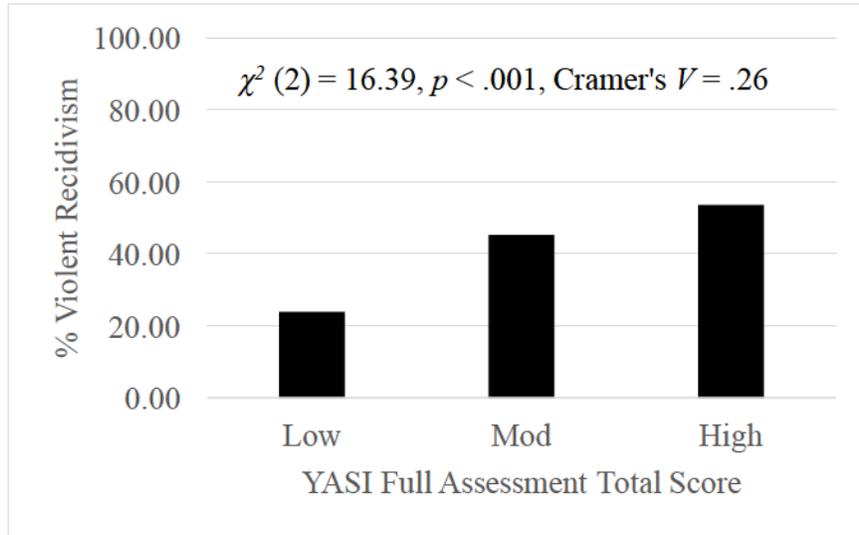


Figure 23. Percentage of Violent Recidivists at Each Level of the YASI Full Assessment Total Scale Score (Total Sample)

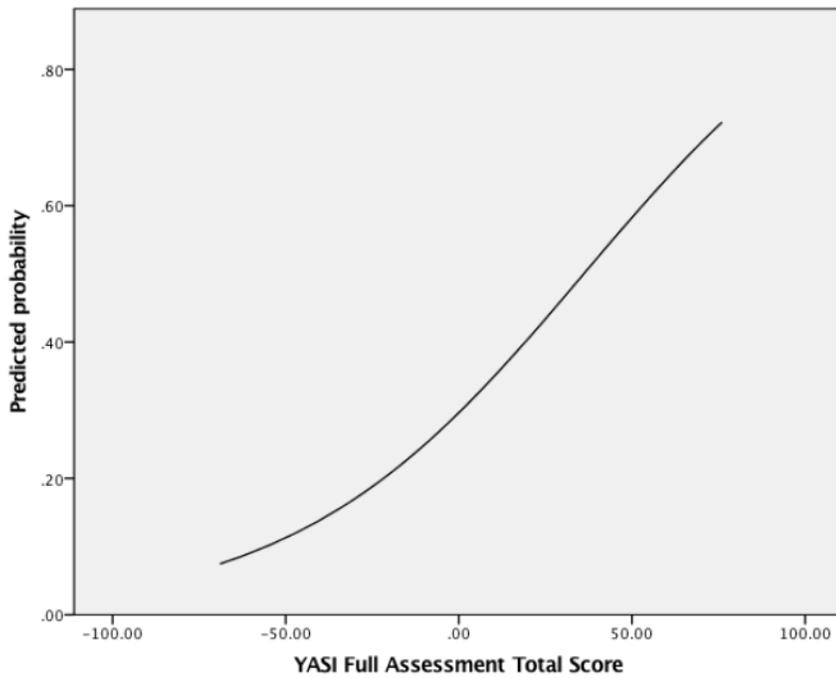


Figure 24. Predicted Probability of Violent Recidivism and YASI Full Assessment Total Scale Score (Total Sample)

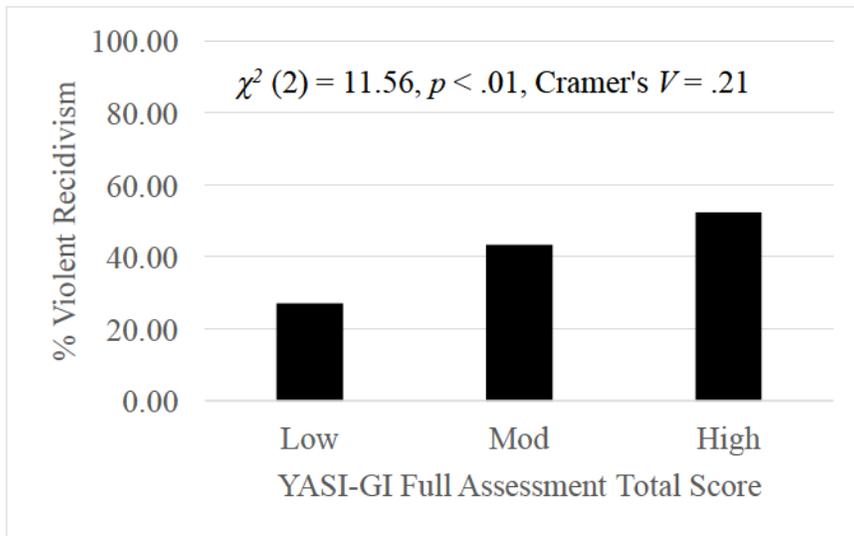


Figure 25. Percentage of Violent Recidivists at Each Level of the YASI-GI Full Assessment Total Score (Total Sample)

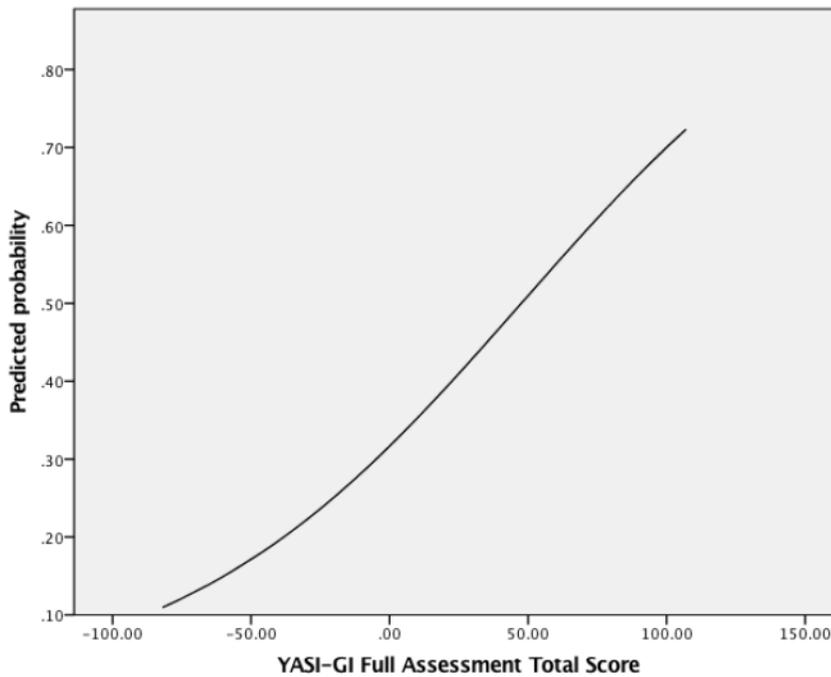


Figure 26. Predicted Probability of Violent Recidivism and YASI-GI Full Assessment Total Score (Total Sample)