Running Head: PREDICTORS OF CRIMINAL OFFENDING

Predictors of Criminal Offending: Evaluating Measures of Risk/Needs,
Psychopathy, and Disruptive Behaviour Disorders

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to the Department of Psychology,
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Abstract

The reliability and predictive validity of DSM-IV based assessment instruments, two measures of psychopathy, and an actuarial measure of risk/needs were examined in a sample of 408 “at risk” adolescent offenders. Results suggest that all instruments are reliable and show construct and concurrent validity. Furthermore, the ADHD Rating Scale-IV, Psychopathy Checklist: Youth Version, and Youth Level of Service/Case Management Inventory (YLS/CMI) are significant predictors of future criminal outcomes, including juvenile and adult incarceration and violence. Instruments were determined to be valid for either male or female subsamples. The YLS/CMI exhibited functional validity, as changes in total scores and subcomponents typically reflected significant changes in the future likelihood of juvenile offending. Additional analyses identified six offending trajectories, with severe and early onset of behavioural problems being indicative of a chronic offender pathway. It was determined that levels of antisocial peer relations, antisocial attitudes, and hyperactivity during adolescence predicted who were probabilistically likely to desist from future antisocial conduct. Educational and parental factors were found to discriminate between late onset offenders who persisted in crime from those who desisted from future criminal activity. Evidence for trajectory-specific discriminants are discussed within a developmental framework. The findings have direct implications for the assessment of adolescent offenders as well as prevention and intervention policies.

Acknowledgements

From there to here.
From here to there.
Funny things are everywhere ...

Some are red. And some are blue.
Some are old. And some are new.
Some are sad. And some are glad.
And some are **very very bad.** - Dr. Seuss

With deep appreciation for everything she does and everything she is, I would like to acknowledge my wife and best friend for all her support during my academic pursuits. The road has been long, and at times troubled, but I cannot imagine not having her with me on the journey. I look forward to our future endeavours and shared experiences.

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Predictors of Criminal Offending: Evaluating Measures of Risk/Needs,
Psychopathy, and Disruptive Behaviour Disorders

The forensic psychology literature has recently been flourishing with research focusing on the development of delinquent conduct. Two decades of longitudinal studies have provided new insights and understanding into the origins of criminal careers. They have stimulated a resurgence in the statistical re-analysis of earlier research findings and provided new interpretations of classic studies. From the outset, concern has been to search for viable explanations of both serious and violent youthful offending as well as identifying both the predictors and moderators of this phenomenon.

The importance of identifying both the risk and protective factors in the progression towards serious offending is as important now as ever. It is a fascinating aspect of the current research trend that after years of focusing on social factors and adult environments there is now a renewed emphasis on early childhood experiences and precursors of crime early on in the lives of chronic offenders. Regardless of recent trends, it is clear that there is not yet a simple explanation available to account for the emergence of criminal offending and its persistence or desistance over time.

Approaches

The general personality and social psychological approach to criminal behaviour has emerged as a valuable model of criminal conduct in the last two decades in response to the tendency of previous theories to focus on only one or two primary factors. Theories that confine their focus to a limited number of factors have often been dismissive of human diversity and variation in human behaviour. In the end, these theories have been inconsistent with empirical research findings (for a review see Andrews & Bonta, 1998).

The general personality and social psychological model, best described as a social learning theory, suggests that predicting any particular act warrants the consideration of a vast array of factors. The primary stipulations of this model are that individuals have the ability to learn through observation, cognition plays a vital role in behaviour, and factors involved in the immediate situation have an impact on action. This broad-based perspective has been presented by numerous researchers including Andrews and Bonta (1998), Elliott, Huizinga, and Ageton (1985), Henggeler (1989), LeBlanc, Ouimet, and Trembley (1988), Patterson, DeBaryshe, and Ramsey (1989), and Trembley et al. (1992).

Andrews' and Bonta's interpretation (1998) specifically stressed that when analyzing the determinants of behaviour it is essential to assess behavioural history, personality, attitudes, and associates (otherwise known as the "big four"). These four theoretically derived variables have been empirically validated in numerous prediction studies (for a review see Andrews & Bonta, 1998). Andrews' and Bonta's Personal, Interpersonal, and Community-Reinforcement (PIC-R) perspective contends that these variables may be further influenced through family, school, work, features of the immediate situation, and the community. The model recognizes multiple routes to criminal conduct and in doing so is consistent with the best validated predictors of criminal offending and the most promising psychological perspectives of human behaviour (Andrews & Bonta, 1998). Any predictive model or perspective on criminal behaviour requires due consideration of these four factors.

Functions of Prediction

Predicting future criminal behaviour has arguably been the preeminent task of the psychology of criminal conduct. Three primary functions for prediction research have been recognized. The first is to establish empirically based risk predictors for criminal conduct.

Knowledge of risk predictors allows for the identification of the early antecedents of criminality and the designation of high-risk classification groups. This, in turn, permits preventative strategies to be assembled and resources to be allocated appropriately towards those most at risk.

A second function of prediction research is to investigate theoretical positions, with respect to the etiology of criminal behaviour. This procedure can verify or dispute established theories as well as provide an empirically based framework from which new theories can be proposed. The final purpose of prediction research is to assist in the development of empirically based instruments for criminal justice decision making and to provide a practical understanding in the advancement of correctional management (Andrews & Bonta, 1998; Blackburn, 1993).

General Risk Predictors

Knowledge of the correlates and simple predictors of criminal behaviour is obtained through cross sectional studies and longitudinal studies, respectively. These covariates are commonly referred to as the risk factors for future criminal offending. It has been noted that the findings of cross-sectional and longitudinal designs examining risk factors for criminal offending have been highly compatible (Andrews, Leschied, & Hoge, 1992; Gottfredson & Hirschi, 1990). Thorough reviews of the cross sectional and longitudinal research have all been able to cite evidence that implicates a wide range of variables that contributes to delinquent conduct (Andrews and Bonta, 1998; Andrews, Hoge & Leschied, 1992; Elliott et al. 1985; Hawkins et al., 1998; Henggeler, 1989; Kazdin 1987; Lipsey & Derzon, 1998; Loeber & Dishion, 1983; Loeber & Stouthamer-Loeber, 1987).

Several recent meta-analyses have been conducted to determine the relative importance of the correlates of criminal offending. The largest of these was conducted by Gendreau, Goggin, and Little (1996). They reviewed 131 studies between 1970 and 1994 to determine the

correlation coefficients between various predictors and criminal conduct. Among the best predictors reported were companions ($r = .21$), antisocial cognitions ($r = .18$), personality ($r = .18$), and criminal history ($r = .16$). Parental practices ($r = .14$) and social achievement ($r = .13$) were also noted as important factors.

In another meta-analysis, Simourd and Andrews (1994) specifically examined the risk factors for delinquency in both male and female samples. They found that there were no differences in the risk factors across gender. For both males and females antisocial attitudes and associates exhibited the highest correlations with criminal outcome followed by temperament, educational difficulties, and poor parental relations. In neither case were SES, family structure, or personal distress variables related to criminal outcomes. It is evident that the research to date has been consistent on what composes the major correlates of criminal offending.

Although the literature has identified the major correlates of criminal offending, most studies have examined only general offending and have not specifically examined correlates of serious, violent or persistent criminal conduct. The majority of research conducted to date has subsumed all forms of antisocial behaviour under the same heading. A recent investigation has specifically reviewed the literature on the predictive risk factors for adolescent and early adult violent or serious delinquent behaviour. In this study Lipsey and Derzon (1998) attempted to identify predictor variables prior to adolescence that show the strongest associations with subsequent violent and serious delinquency.

In their review of the predictive literature, Lipsey and Derzon (1998) examined the predictive strength of variables during the elementary school years (age 6-11) for identifying serious and violent offending (SVO) during adolescence and early adulthood. Among the strongest predictors of SVO were substance abuse and prior antisocial behaviour. Juveniles with

these characteristics were 5 to 20 times more likely to engage in subsequent violent or serious criminal conduct. Gender, antisocial parents, and low family SES were amongst the next strongest predictors. Notably, family characteristics did not generally correspond to future delinquency as measured at the ages of 6-11. The authors were quick to point out that different studies generate significantly different estimates in the strengths of predictive relationships.

In a second analysis by Lipsey and Derzon (1998) they investigated the relationships between variables measured during the 12-14 year age period with SVO measured during ages 15-25. Again, many predictor variables showed relatively high correlations with delinquent outcomes. Prior antisocial behaviour remained a good predictor but the best predictors for this age group were juvenile social relations including involvement with antisocial peers ($r = .37$) and lack of pro-social ties ($r = .39$).

Lipsey and Derzon (1998) concluded that the best predictors were different for different age periods. For example, substance abuse was one of the best predictors for the younger age group but one of the poorest for adolescence. Thus, early substance abuse is predictive for younger children but the same behaviour is less predictive at a later age. Less important predictors are typically static personal characteristics for both the 6-11 year old group (gender, SES, antisocial parents) and for the 12-14 year old group (general offences, past school performance). Furthermore, broken homes and abusive parents are the poorest predictors for both age groups.

Hawkins et al., (1998) offered a similar analysis of several longitudinal studies with particular focus on the malleable and protective factors for violence. This study categorized risk factors into family, school, peer-related, and situational factors as well as psychological characteristics and community/neighbourhood variables. Psychological characteristics such as

hyperactivity, attention deficit, impulsivity, and risk taking were found to be consistently predictive of future violence. The authors reported that the mean weighted correlation between violence and measures of hyperactivity, attention deficits, and impulsivity/risk taking were .13, .17, and .25, respectively. In contrast, internalizing disorders or personal stress variables were not linked to violent offending.

It would seem that the risk factors for general and violent offending are likely similar in nature (Tolan & Lorion, 1988). The risk or protective factors that distinguish between those who will have a limited criminal lifespan from those who are only just commencing a long and chronic criminal lifestyle are not as clear. Knowledge of the characteristics that distinguish those juveniles who are most likely to later develop serious delinquent careers is critical to intervention and prevention efforts. It is plausible that those predictors will not only signify who is at risk but may also be substantial contributors to the behaviour itself and, therefore, offer targets for treatment and intervention (Andrews, Bonta, & Hoge, 1990; Andrews, Dowden, & Gendreau, 1999; Catalano & Hawkins, 1996; Farrington, 1996; Lorion, Tolan, & Wahler, 1987; Lynam, 1996; Tolan, Guerra, & Kendall, 1995).

Individual Risk Factors for Criminal Offending

An examination of several meta-analyses for risk factors for general recidivism has already been undertaken. This allowed for an examination of the relative strengths of some factor categories but did not allow for a more precise definition of risk factors. Notions of hyperactivity and inattention have been ill defined in the criminological literature to date and its past use does not necessarily reflect the criteria for disruptive behaviour disorders as used by the DSM-IV. It is important to have a grasp of the specific variables within each of the broader categories of risk factors to have a clear understanding of both risk and protective factors and

specific determinants of criminal offending. Research on each risk factor's relationship with future violent offending or long-term serious offending needs to be investigated. For this reason a review of the major need areas already identified through meta-analyses as well as data specifically relating to disruptive behaviour disorders will be conducted.

Alcohol and Drugs. Often substance abuse and antisocial behaviour involve similar risk factors and many researchers have considered them as a reflection of a willingness to engage in socially disapproved of behaviour (Catalano & Hawkins, 1996). Drugs use, for example, may be a risk factor by instigating crime to support a habit, be part of a crime itself (i.e., trafficking) or be part of a deviant lifestyle in which drug use forms a part.

Most prospective studies suggest a relationship between the number of antisocial conduct problems and the likelihood that an individual takes illicit drugs (Hawkins, Catalano, & Miller, 1992). That is, as the seriousness of offending increases, so does the frequency and seriousness of drug use (Elliott, Huizinga, & Menard, 1989; Fergusson, Lynskey, & Horwood, 1996; Thornberry, Huizinga, & Loeber, 1995; Thornberry & Krohn, 1997; for a review see Huizinga & Jakob-Chien, 1998). Loeber, Stouthamer-Loeber, Van-Kammen, & Farrington (1991) showed that as the seriousness of delinquency increased so did the percentage of drug users and that the most serious offenders had the highest percentage of drug use. Reciprocally, as seriousness decreased so did the proportion of those involved in drug use.

Alcohol use is somewhat different from drug use in that it is associated with a variety of conduct type offences and is commonly identified as a factor in violent crime (Collins, 1986). As well, similar to drug use, excessive alcohol use may reflect an impulsive or reckless lifestyle. In an early examination of several data sets, Loeber et al. (1991) reported that alcohol use did not significantly differentiate between types of offenders. In a careful examination of the Denver

Youth Survey, Huizinga & Jacob-Chien (1998) later reported that both violent and nonviolent serious offenders had the highest prevalence of alcohol, marijuana, and other drug use. For example, those considered serious violent, serious nonviolent, minor, and nondelinquent had proportions of alcohol use of 58%, 51%, 38%, and 15%, respectively. A similar pattern emerges when alcohol and drug use was examined in association with problems experienced with police, schools, families, and peers. Again, a greater proportion of serious offenders experienced problems with both alcohol and drugs than nonserious offenders.

The association between antisocial behavior and substance use remains complex. It seems more likely that antisocial behaviour predisposes one to substance abuse (Rutter, Giller, & Hagell, 1998) and that the use of drugs and alcohol simply make violent acts more likely (Parker, 1996). Regardless, both alcohol and drug abuse show a substantial association with crime and serious delinquent behaviour, with a bi-directional causal process that goes well beyond simple shared risk factors (Brook, Whiteman, Finch, & Cohen, 1996). Thus, antisocial behaviour at an early age increases the risk for alcohol or drug problems and vice versa.

Academic. Measures of academic achievement are one of many school-related factors that have been hypothesized to affect criminal and violent behaviour. Empirical findings from recent longitudinal studies have found that a delinquent's IQ is slightly below that of nondelinquents in the general population even after controlling for social background (Hinshaw, 1992; Lynam, Moffitt, & Stouthamer-Loeber, 1993; Maguin & Loeber, 1996; Moffitt, 1993). Some recent studies suggest that any association between IQ, learning problems, and antisocial behaviour largely applies to early onset rather than late-onset offenders (Stattin & Magnusson, 1995). It seems that IQ may play a role in antisocial behaviour separate from that of academic

performance, however, one cannot negate the potential effect of this finding on academic performance.

There is considerable evidence from the psychological literature that academic and school related problems are related to delinquent conduct (Brier, 1995; Chung, Hill, Herrenkohl, Hawkins, & Gilchrist, 1999; Elliott et al., 1989; Fagan & Pabon, 1990; Maguin & Loeber, 1996). Denno (1990), for example, found that academic achievement assessed at age 7 and at the age of 14 was inversely related to violent offending for both males and females. In Farrington's study (1989), boys assessed by teachers as low attainment at the age of 11 were twice as likely to be convicted of violence in adulthood. Further, low academic performance at 10, 14, and 16 predicted increased risk for violence at the age of 18 (Hawkins et al., 1998). It is noteworthy that academic problems and delinquency may depend on many other causal factors (Fagan & Pabon, 1990; Jarjoura, 1996; Maguin & Loeber, 1996) or may be related to other proximal factors that in turn lead to delinquency (Chavez, Oetting, & Swaim, 1994).

Nevertheless, a correlation between academic success and delinquency has been found in most data sets (e.g., Huizinga & Jacob-Chien, 1998) with a substantial increase in risk for violent crime if failures are exhibited during elementary school grades (Maguin et al., 1995). High school achievement has also been found to be a protective factor against later violence for both late onset and chronic offenders (Hill et al., 1999).

One explanation has been that the intelligence and antisocial behaviour connection reflects the effects of antisocial behaviour on academic performance, rather than the other way around. Maguin and Loeber's (1996) meta-analysis as well as Hinshaw's 1992 review suggested that the association between low IQ and delinquency is closely bound with the factors of

hyperactivity and inattention and may be mediated by truancy. This lends support to there being substantial mediating factors between academic success, IQ, and delinquency.

When a variety of school problems were collapsed into one category it was found by Huizinga and Jacob-Chien (1998) that the vast majority of serious and violent offenders had a school problem (87%) and that even serious nonviolent offenders experienced school problems in a large proportion (79%). As school problems increased so did the level of delinquent involvement. This indicates a clear relationship between school problems and serious delinquency. However, the greatest relationship was found between truancy and suspensions as opposed to dropouts or academic achievement.

The relationship between truancy and suspensions has been extensively examined. In Huizinga and Jakob-Chien's (1998) study they found that a high percentage of serious delinquents were truants and more had been suspended than any other offender type. In contrast, nondelinquents were much less likely to be truants or be suspended than delinquents. In the Cambridge study, those with high truancy rates at ages 12 to 14 were more likely to engage in violence in both adolescence and adulthood (Farrington, 1989). Leaving school prior to the age of 15 was predictive of all measures of future violence (Farrington, 1989). It seems that truancy is a contributory risk factor as it facilitates a drift into crime by providing additional opportunities for misconduct (Rutter et al., 1998).

There is mixed evidence to date to suggest that low bonding to school is an important factor in developing violent behaviour. Maguin et al. (1995) and Chung et al. (1999) assessed low commitment to school and low educational aspirations at the age of 10 and found that neither predicted later violence. In a Seattle dataset commitment and school bonding were predictive of late violence when measured during late adolescence (Hill et al., 1999). Utilizing

the same data set, Herrenkohl and his colleagues (1999) reported that by the age of 15, low commitment to schooling was predictive of violence at age 18. Mitchell and Rosa (1979) as well as Elliott (1994) found no association between early reports of children's attitudes towards school and court reported violent crimes in adulthood. It has been demonstrated that different facets of academic and school-related variables have a diverse impact on future offending dependent on time and sample characteristics. Clearly, academic variables share a complex relationship with child and adolescent conduct problems.

Attitudes. Several researchers have investigated the link between individual attitudes and beliefs and future criminal activity. The work of Gendreau and his colleagues (Gendreau et al., 1996) has consistently pointed to the utility of attitudes in predicting general recidivism yet, little evidence has been unearthed that links attitudes and violent offending. Elliott (1994) and Maguin et al. (1995) found that deviant attitudes and attitudes specifically supportive of violence are related to self-reported violence during early adulthood. Furthermore, Hill et al. (1999) identified prosocial beliefs as a differentiating factor between chronic offenders and desisters at the age of 15. More specifically, prosocial beliefs were found to be a factor encouraging desistance from crime or "protecting" against the potential of chronic offending.

Dodge's proposition that aggressive individuals have a distorted style of social information processing that leads them to wrongly attributed hostile intent and focus on aggressive social cues has generated a significant body of supportive research (Dodge & Schwartz, 1997). For instance, a hostile attribution bias has been shown to predict later aggressive behaviour (Dodge, Pfeffer, Bates, & Valente, 1995) and aggressive children have generally been found to hold positive evaluations about aggression and believe that it is socially acceptable (Dodge & Schwartz, 1997). Antisocial aggressive youths have also been found to be

more likely to anticipate few consequences of aggression, maintain a set of beliefs that supports aggressive behaviour (Slaby & Guerra, 1988; 1990), and expect tangible rewards and a reduction in the aversive treatment by others for their aggressive actions (Perry, Perry, & Rasmussen, 1986).

There is mounting evidence that not only are antisocial attitudes important risk factors for delinquency but those attitudes specifically supportive of aggression and violence are predictors of serious and violent juvenile conduct. At present, however, there is a lack of research focus on this important domain in many longitudinal studies.

Family Factors. The focus of much of the literature on prediction of offending has been towards familial environment and child rearing practices. Parental criminality, for instance, has long been found to have links with a child's likelihood of engaging in serious or violent criminal conduct (Baker & Mednick, 1984; Farrington, 1989; Maguin et al., 1995). This has not been an entirely consistent finding (Farrington, 1989). McCord (1979) found no link between parental offences or self-reported deviance and their sons' violent behaviour in adolescence or early adulthood. Similarly, Moffitt (1987) found no link between parental mental illness and violent offending in their offspring. Along with inconsistent findings is the difficulty the literature has had with both identifying the direction of influence in the parent-child relationship and outlining the processes involved in any relationships identified.

Child abuse has often been paired as a causal factor in the development of criminal offending but there is only limited evidence of this relationship. Widom (1989), for example, showed that those offenders who were sexually abused were slightly less likely to commit a violent offence than those who were never sexually abused. In contrast, those who have been victims of violence in the home were slightly more likely to commit a violent act while those

who were emotionally neglected were most at risk for future violence. Zingraff, Leiter, Myers, and Johnson (1993) found near zero correlations between various forms of child abuse or neglect and official violent offences. In a meta-analysis of child maltreatment variables, Hawkins et al. (1998) found the mean correlation between child maltreatment and violence in a sample of 3555 subjects to be .06. It was further reported that the correlation between sexual abuse and violence is -.03, physical abuse and violence is .02, and neglect and violence is .07. In sum, research has provided limited support for a connection between abuse and violent behaviour.

Parental relationships with their children have been explored extensively as a potential explanatory factor in juvenile delinquency and the development of adult criminality (for a review see Loeber, & Dishion, 1983; Loeber & Stouthamer-Loeber, 1986). Parent child relations have typically been divided into at least three separate dimensions in the literature: poor family management, involvement/interactions between parents and child, and attachment. It is interesting to note that poor management practices have typically been viewed as a risk factor for crime whereas involvement/interaction and attachment variables have been viewed as protective factors against the potential for delinquency (Catalano & Hawkins, 1996). Regardless, most studies do not allow a complete determination of whether these variables are simply moderators rather than protective factors (Hawkins et al., 1998).

Research has been consistent that parental failure in setting clear expectations for their children's behaviour, poor parental supervision and monitoring, and excessive or inconsistent discipline represents a set of family management practices that place a youth at risk for future delinquency (Capaldi & Patterson, 1996). McCord (1979) found that poor parental supervision and level of aggressiveness used by parents in disciplining their children predicted convictions into mid-adulthood. Similarly, Wells and Rankin (1988) found a non-linear relationship in their

study of parenting practices. Boys with the most strict and the most lax parental controls reported the highest levels of violence while those who were neither very strict nor lax reported the least violence. Further, boys who were punished inconsistently were most likely to commit a future offence. Farrington (1989) has asserted that poor child rearing, authoritarian parenting style, poor parental supervision, and harsh discipline all predict later violence.

Maguin et al. (1995) found that poor family management practices at ages 14 and 16 predicted self-reported violence at the age of 18. Interestingly, children's reports of poor family management at the age of 10 were not significant predictors of future violence. When the same data set was further analyzed after identifying four violent offending trajectories it was found that poor family management at the age of 10 could distinguish nonoffenders from late starters but that family factors could not distinguish desisters from chronic offenders (Chung et al., 1999). However, at 15, good family management measures could distinguish desisters from chronic offenders (Hill et al., 1999).

Bonding and attachment between a child and his/her parents is an essential element in social control theory. According to this doctrine, bonding to the family inhibits crime and delinquency (Hirschi, 1969). Despite the importance of this relationship, few studies have examined attachment to family as a protective factor in delinquency. Elliott (1994) utilizing the National Youth Survey data reported a non-significant relationship between family bonding and violence. Hawkins et al. (1998) has aptly pointed out that studies addressing this link have often failed to distinguish attachment to prosocial family members from attachment to antisocial family members. As such, it is difficult to determine whether bonding to prosocial family members inhibits later serious or violent criminal behaviour.

Numerous interesting relationships have been found in the literature. Family and marital conflict has shown a relationship to later convictions for violent crimes (Elliott, 1994; Farrington, 1989; Maguin et al., 1985; McCord, 1979), although Hawkins et al. (1998) found this relationship to be dependent on the individual's age. Parental tolerance of violence has been linked to the self-reported violence in their children (Maguin et al., 1995). In fact, Hawkins et al. (1998) found that parental attitudes favourable to violence that were assessed at the age of ten more than doubled the risk that subjects would engage in violence by the age of 18. Lack of residential stability has been noted in some studies (Hawkins et al., 1998; Maguin et al., 1995) as a predictor of future violence in children but this could reflect a number of other factors.

Early separation from parents has frequently been cited as predictive of later violent behaviour (Farrington, 1989; Henry, Caspi, Moffitt, & Silva, 1997; McCord & Ensinger, 1995; Quinsey, Harris, Rice, & Cormier, 1998; Wells & Rankin, 1991; Wilson & Herrnstein, 1985). In fact, the notion of "broken homes" has been a featured risk factor for serious delinquency since the start of criminological research. In an extensive survey it was determined that those children from a divorced home showed an odds ratio of 3.1 for later conduct disorder and 1.9 for adult antisocial personality disorder (Kessler, Davis, & Kendler, 1997). Much of this risk has been conjectured to stem from chronic family adversities preceding divorce (Rutter et al., 1998). In the Dunedin study, Henry, Moffitt, Robins, Earls, and Silva (1993) found that repeated family separations and discord was the strongest of all family predictors. This finding was replicated by Fergusson, Horwood, and Lynskey (1992). They added that family conflict remained a risk factor of antisocial behaviour regardless of family separation while the reverse was not the case.

Peer-related factors. The effect of delinquent siblings on violent behaviour has been repeatedly assessed. Farrington (1989) found that having delinquent siblings at the age of 10

predict convictions for violence. In fact, subjects with delinquent siblings are two and a half times more likely to have a registered violent offence than those with no delinquent siblings. Maguin suggested that delinquent siblings have their strongest correlations with violent behaviour during adolescence (Maguin et al., 1995).

Delinquent peers has often been found to be one of the strongest predictors of future delinquency (Gendreau et al., 1996). Several studies have also shown consistent positive relationships between antisocial associates during adolescence and later violence (e.g., Ageton, 1983). Both Ageton (1983) and Elliott (1994) found that adolescents whose peers disapproved of delinquent behaviour were less likely to engage in future violent behaviour. Moffitt (1993) and Thornberry and Krohn (1997) have suggested that antisocial peers contribute to adolescent offending patterns and are less relevant in distinguishing persistent offenders who have already initiated aggressive and violent behaviour earlier in life.

At all three developmental points in their study Hawkins et al. (1998), found that having delinquent peers was predictive of an increased risk for later violence. Notably, this risk greatly increased at every developmental point, not just in adolescence. Hill et al. (1999) provided substantial evidence that antisocial peer opportunities and antisocial peer involvement was a significant risk factor for predicting violence at the age of 10 and at the age 15 for both chronic and adolescent onset offenders. Generally, longitudinal designs have indicated that delinquent associations is associated with persistence, whereas a lack of antisocial peers is associated with desistance (Farrington, 1986; Loeber et al., 1991).

Gang membership was found to more than triple the risk of violence at 14 years of age and more than quadruple the risk at age 16 (Hawkins et al., 1998). This is consistent with studies that have shown that gang membership is not only predictive of future risk of violence (Maguin

et al., 1995; Thornberry, 1996) but contributes to the explanation of delinquency once delinquent peers has been accounted for (Battin, Hill, Abbott, Catalano, & Hawkins, 1998).

The overall conclusion is that there is strong evidence that antisocial individuals tend to have friends and acquaintances that are antisocial. What is more compelling is that this peer group seems to exert an influence on the individual's likelihood of persisting, desisting or commencing their antisocial activities. Dishion and Patterson (1997) have shown that interactions with antisocial peers consistently serve to endorse deviant values and norms. It is through these interactional processes that youths may come to perceive the costs and benefits of antisocial conduct differently (see Andrews & Bonta, 1998) and therefore increase or decrease the probability of future offending.

Disruptive Behaviour Disorders

There are several studies that examine the long-term outcomes of individuals who meet the diagnostic criteria for a disruptive behaviour disorder or are likely to meet those criteria. A review of the literature and fundamental research concerns Attention Deficit Hyperactivity Disorder and Conduct Disorder is necessary to have a more complete understanding of the disorder and its potential as a partial explanation for serious and chronic antisocial behaviour. Further, it may allow for scrutiny and interpretation of longitudinal studies that have implemented individual criterion measures of hyperactivity, inattention, and impulsivity.

ADHD Overview. Attention Deficit Hyperactivity Disorder (ADHD) is currently defined by the DSM-IV (APA, 1994) as a "persistent pattern of inattention and/or hyperactivity that is more frequent and severe than is typically observed in individuals at a comparable level of development" (p. 78). The conceptualization of ADHD over the past century, however, has changed drastically (see Barkley, 1994). For the last two decades, ADHD has been viewed as

comprising three primary symptoms; poor attention span, impulsiveness, and hyperactivity. More recent research is leading to the conclusion that ADHD without hyperactivity is actually a disorder of attention that is separate and distinct from ADHD with hyperactivity. That is, ADHD, as currently defined, consists of two disorders that are fundamentally different in nature (Barkley, DuPaul, & McMurray, 1990; Goodyear & Hynd, 1992). As Barkley argues (1997), the current view of ADHD is “clustering into a single set of disorders what are, in reality, two qualitatively different disorders” (p. 81). Concerns have therefore been raised in the literature about how to differentiate the different types of ADHD. Most of the emphasis has been placed on hyperactivity and impulse control as being the critical features since it has been these factors that primarily determine risks for later developmental and behavioural problems (Barkley, Fischer, Edelbrock, & Smallish, 1990; Weiss & Hechtman, 1993).

ADHD is probably the extreme end of a normal psychological trait, one that goes through developmental elaboration or maturation (Barkley, 1997; Levy, Hay, McStephen, Wood, & Waldman, 1997). It seems clear that the hyperactive-impulsive dimension of ADHD arises first, is associated with a wide range of cognitive impairments that vary, are persistent over time, and are predictive of eventual comorbidity for ODD, CD, and antisocial acts (Barkley, 1997). The childhood symptoms of hyperactivity-impulsivity are also strongly predictive of negative adolescent outcomes while those of inattention are much less so, if at all (Fischer, Barkley, Fletcher, & Smallish, 1993; Weiss & Hechtman, 1993). These findings imply that hyperactive-impulsive only and inattentive only subtypes of ADHD represent different disorders while the mixed type of ADHD (hyperactivity and attention) is a subsequent developmental stage of the hyperactive-impulsive subtype. It is the ADHD hyperactive subtype that seems most likely to be related to future offending or antisocial behaviour.

In 1994, Hinshaw presented a summation of the key differences between groups defined as attention deficit disorder without hyperactivity (ADD/WO) versus those characterized as attention deficit disorder with hyperactivity (ADD/H). As for comorbid symptom patterns, the ADD/WO group displayed fewer indicators of aggressive or conduct disordered behaviour than ADD/H. Goodyear and Hynd (1992) specified that ADD/H was much more likely to display externalizing behaviour problems and receive a further diagnosis of CD or ODD. More importantly, sluggishness, forgetfulness, and apathy characterized the children with ADD/WO, whereas those with ADD/H exhibited the more classic signs of cognitive disorganization and failure to remain on task. The point has been made that there has been an entanglement in the literature by combining two separate disorders with distinct developmental pathways. It needs to be stressed that hyperactivity is uniquely characterized by a deficient behavioural inhibition system (for a review see Barkley, 1997).

Recent investigations suggest that the cognitive deficits and behavioural impairments cited by Barkley (1997) are more characteristic of children with ADHD than those of CD or other emotional disturbances (Pennington & Ozonoff, 1996; Schachar & Logan, 1990; Schachar Tannock, & Logan, 1993; Schachar, Tannock, Marriot, & Logan, 1995). Furthermore, the disturbances in motor inhibition and information processing are specific to children with ADHD and are not seen in those without ADHD but with aggression (Oosterlaan & Sergeant, 1996). So although laboratory inattentiveness does not appear to be restricted to ADHD, cognitive impulsiveness, behavioural impulsiveness (Halperin, Matier, Bedi, Sharma, & Newcorn, 1992; Milich, Hartung, Martin, & Haigler, 1994, Schweitzer & Sulzer-Araroff, 1995; White, Moffitt, Earls, Robins, & Silva, 1990) and motor hyperactivity (Halperin et al., 1992) have been shown to be exclusively linked to ADHD. Regardless of how one examines the issue, behavioural

impulsivity or disinhibition appears to be of crucial importance to ADHD (Hinshaw, 1994) and to be the factor that most likely predisposes individuals to later negative outcomes.

Studies have shown that children with mixed ADHD and conduct problems are likely to have as many or more cognitive impairments than those of ADHD alone (see Lynam, 1996). It appears that ADHD is most closely related with cognitive or neuropsychological impairments, whereas CD is more aligned with adverse psychosocial factors (Hinshaw, 1987; Pennington & Ozonoff, 1996). Whether one concludes that ADHD with conduct problems is a qualitatively different disorder with a different developmental pathway, as some have suggested (Biederman et al., 1996; Lynam, 1996; Schachar & Logan, 1990) or simply a more severe form of ADHD alone (Barkley, 1997; Thompson, Riggs, Mikulick, & Crowley, 1996), the research has proposed that inhibitory, neuropsychological and motor deficiencies (Barkley 1997) are characteristic of ADHD and not aggression, conduct disorders or learning disabilities.

ADHD and Antisocial Behaviour. Overall, ADHD is far from a benign disorder. It carries significant risk for antisocial outcomes and for continuing patterns of behavioural inhibition, cognitive dysfunction, and interpersonal difficulties (Hinshaw, 1994). Developmental sequences of ADHD are most likely very complex and interactive with a variety of processes. Moffitt (1993) argues that the deficits found in these individuals are likely distal and cumulative rather than direct. Whatever the case, they are certainly not obvious or easily stipulated.

The prevailing view for some time was that children with clinically significant levels of ADHD held a good prognosis (Hinshaw, 1994). Today, most long-term prospective follow-up studies have painted a far bleaker picture of the developmental course of ADHD. Children with ADHD are at increased risk for negative outcomes such as delinquency (Satterfield, Hoppe, & Schell, 1982), early school dropout (Weiss & Hechtman, 1993), substance abuse (Gittelman,

Mannuzza, Shenker, & Bonagura, 1985), and relationship difficulties (Weiss & Hechtman, 1993). Considerable variability exists, as the majority do not go on to have pervasive social adjustment problems (Weiss & Hechtman, 1993).

A number of prospective longitudinal studies have been conducted over the last decade examining the life course of children diagnosed as ADHD (Barkley et al., 1990; Biederman et al., 1996; Claude & Firestone, 1995; Gittelman et al., 1985; Mannuzza, Klein, Konig, & Giampino, 1989; Taylor, Chadwick, Hepinstall, Danckaerts, 1996). The consistent finding has been that the manifestations of ADHD often persist into adolescence and adulthood. Whereas some symptoms such as motoric hyperactivity may dissipate and disappear, there is a strong likelihood that attentional difficulties, peer relationship problems, academic under-achievement, and other psychological sequelae will persist. Recent studies have shown that the persistence of ADHD can be predicted from familial ADHD, family indices of psychosocial adversity, and psychiatric comorbidity in ADHD (Biederman et al., 1996; 2001) and those ADHD symptoms may be elicited and maintained by adverse environmental circumstances.

Three things have remained clear through the long-term studies of ADHD: (1) childhood symptom patterns of ADHD persist into mid to late adolescence (Barkley et al., 1990; Gittelman et al., 1985; Mannuzza et al., 1989); (2) indices of under-achievement such as school failure are widespread (Fischer, Barkley, Edelbrock, & Smallish, 1990); and (3) antisocial behaviour develops in up to half of the subjects with delinquency and incarceration common outcomes (Gittelman et al., 1985; Satterfield et al., 1982). In a study by Schachar, Rutter, and Smith (1981) they found that hyperactivity was associated with the continuity of conduct problems while its absence was associated with a recovery from conduct problems.

Using the Cambridge study sample, Farrington, Loeber, and Van Kammen (1990) examined the behavioural cluster that they coined hyperactive-impulsive-attention problems (HIA). In children assessed between 8 and 10 years of age it was discovered that this cluster predicted self-reported and officially documented criminality in both adolescence and adulthood, even when childhood aggression was accounted for. The authors found that aggression and HIA were additive factors in the prediction of antisocial behaviour. By the age of 25, HIA was still predictive of persistent criminal activity independent of childhood aggression, with no interactive effects. Thus, Farrington's study pointed to the legitimacy of ADHD as a predictor of persistent criminal offending. ADHD, however, appears to interact with a variety of influences to exacerbate the risk for persistent criminal behaviour. The susceptibility to these influences appears to be quite dynamic and fluctuate over the developmental course of ADHD.

Conduct Disorder. The DSM-IV defines conduct disorder as a "repetitive and persistent pattern of behaviour in which the basic rights of others or major age-appropriate societal norms or rules are violated" (p. 85). These behaviours range anywhere from mild conflicts with authority (e.g., stay out late) to severe violations of the rights and welfare of others (e.g., assaults). It has been consistently demonstrated that although conduct disorder criteria can encompass a diverse range of behaviours, these behaviours tend to be highly correlated (Frick 1993). As such, conduct problems are typically viewed in the literature as a single dimension.

In school age children the prevalence of conduct problems has consistently been around 10% with severe CD estimated at around 3% (Anderson, Williams, McGee, & Silva, 1987). In adolescence, the rate of conduct problems has been estimated as high as 15% (Cohen et al., 1993) and severe CD as being between 6 and 12% (McGee, Williams, & Feehan, 1992; Frick, 1998). Finally, the prevalence of conduct disorders is greatly moderated by gender. Boys tend

to show higher rates of conduct problems and more conduct disorders. This ratio has been estimated at 4 to 1 in childhood samples (Anderson et al., 1987; Cohen et al., 1993) while estimates of the ratio drop for adolescents to roughly 2 to 1 (Cohen et al., 1993; Offord, Adler, & Boyle, 1986)

There is much debate in the literature as to when it might be necessary to consider an individual as having a conduct disorder versus simply exhibiting a normal pattern of antisocial behaviour. Typically, isolated and atypical conduct problems are not considered indicative of conduct disorder. The DSM-IV (APA, 1994) identifies those with at least three or more behaviours where the basic rights of others or major age-appropriate societal norms are violated over a significant period of time as potential candidates for a diagnosis of CD. This was put forth after a field study by Lahey et al. (1994) determined that a cutoff of three symptoms designated a point at which conduct problems began to be associated with a decline in social and community functioning.

The DSM-IV clearly uses a categorical view of conduct disorder. Some have argued, however, that conduct disorder is simply the extreme end of a continuum measuring this psychological dimension (e.g., Achenbach, 1995). Others have suggested that there may be a natural cutoff point but that our assessment of CD is imprecise (Frick, 1998). Currently, there is a somewhat arbitrary point from which normal antisocial behaviour and conduct disorder are distinguished.

Some facts remain clear about CD. First, the prevalence of CD depends greatly on the severity of the behaviour being considered. As the severity of conduct problems increases, the prevalence decreases (Achenbach, 1997). Second, the prevalence of conduct problems depends on whether studies examine any conduct problem or whether they only consider those meeting

the criteria of a pattern of antisocial conduct. For example, Moffitt (1993) reported that almost 94% of her teenage sample engaged in at least some illegal activities, but only 6% showed a consistent enough pattern of antisocial conduct to warrant a diagnosis of CD. Third, CD clearly varies across age categories. CD increases as individuals move from childhood to adolescence.

Changes across age in the prevalence of CD also suggest that there may be some developmental variations in children who display these characteristics. Longitudinal studies of children who experience a childhood onset pattern of CD seem to follow a progression from less to more serious forms of problems (Lahey & Loeber, 1994; Loeber & Hay, 1996; Frick, 1998) while still retaining the less severe oppositional behaviours. Further, many boys who start in childhood with conduct problems continue to show antisocial and aggressive behaviour of increasing severity into adulthood (Frick, 1998).

Those individuals who exhibit severe conduct problems in adolescence without a history of less severe problems predating the disorder vastly outnumber those with early onset CD and typically have conviction rates comparable to those of early-onset CD (Moffitt, Caspi, Dickson, Silva, & Stanton, 1996). The differences tend to be that individuals with adolescent-onset CD tend to be less violent (Hinshaw, Lahey, & Loeber, 1993; Moffitt et al., 1996), less impulsive (Moffitt et al., 1996) and come from less dysfunctional families (Moffitt, 1993). Most importantly, the adolescent-onset group is much less likely to continue their antisocial behaviour into adulthood than the early-onset counterparts (Frick, 1998). This, of course, led to the later description of this group as *adolescent-limited offenders* (Moffitt, 1993).

Comorbidity in ADHD. Research suggests that the relationship between ADHD and CD is complex (see Jenson, Martin, & Cantwell, 1997). From a categorical point of view, ADHD overlaps with CD and with Oppositional Defiant Disorder (ODD) at rates well above chance

levels (Hinshaw, 1994). The comorbidity of ADHD and CD has been found to range up to 50% in a variety of samples (Anderson et al., 1987; Szatmari, Boyle, & Offord, 1989). For instance, Szatmari et al. (1989) reported on the sample used in the Ontario Child Health Study and determined that 47% of children with a diagnosis of ADHD also met the criteria for CD. In short, aggression and antisocial behaviour are frequent partners with behavioural inhibition. ADHD has been found to be a predictor of the persistence of CD in numerous studies (August, Stewart, & Holmes, 1983; Offord et al., 1992; Schachar et al., 1981). Despite the possibility that there are other potential factors to account for both ADHD and CD, there is certainly a strong case for the same underlying disposition causing both.

There has been considerable debate in the literature whether ADHD is a taxonomically valid disorder distinct from other disorders such as CD. It has been suggested that any association between ADHD and criminality is due to the overlap between ADHD and CD (e.g., Lynam, 1996; Vitelli, 1996). The controversy has arisen primarily due to the degree of behavioural overlap observed between ADHD and other disorders. In a review of relevant studies, Gittelman et al. (1985) examined 20 cross sectional studies comparing ADHD and CD. Although differences were frequently cited, the authors emphasized that the studies themselves were inconsistent in their findings. More recent longitudinal follow-ups have provided consistent impairments that are exclusive to ADHD. Hinshaw (1994) in his review of conduct disorder determined that the two, although correlated, were distinct.

Follow-up Studies of ADHD with Comorbid CD. Similar to findings using only ADHD samples are the results from Gittelman et al.'s (1985) prospective follow-up of 101 children with ADHD. In the original follow-up report, Gittelman and her colleagues found that 27% of the ADHD sample had CD and 19% had substance abuse disorders compared with 8% and 7% from

the comparison group (Gittelman, et al., 1985). Investigation into criminal outcomes found that more probands than controls had been arrested (39% vs. 20%), convicted (28% vs. 11%), and incarcerated (9% vs. 1%). Additionally, the probands appeared to have a much more serious criminal involvement. In total, the ADHD group were three times more likely to have multiple arrests and ten times more likely to have multiple convictions (Mannuzza et al., 1989). A later study followed-up after 16 years found that the probands had 9 times the rate of an Antisocial Personality Disorder (APD) diagnosis (Mannuzza, Klein, Bessler, Malloy, & Lapadula, 1993).

Walker, Lahey, Hynd, and Frame (1987) investigated the antisocial pattern of children having both CD with and without hyperactivity. The mixed group was found to be younger at referral, have more severe antisocial behaviour on all measures, and was more versatile in their behavioural acting out. A similar result was reported by August et al. (1983) in a four-year follow-up of boys with ADHD and boys with ADHD and CD. Outcome data showed that both groups persisted in their over-activity and inattentiveness but only the boys with ADHD and CD were deviant on the noncompliance and aggression measure.

In a nine-year follow-up looking at ADHD with various symptomology, ADHD subjects with elevated defiance ratings had significantly higher felony offender rates than did ADHD subjects with low ratings (Satterfield, Swanson, Schell, & Lee, 1994). However, the pure ADHD sample had significantly higher felony offender rates than did normal controls. Both groups were at risk for serious antisocial behaviour, again suggesting a continuum of symptomology may be responsible for chronic offending.

In a reexamination of the 411 25-year-old men who had been studied as part of the Cambridge database, Farrington et al. (1990) followed four groups identified between age 8 to 10 based on HIA criteria and conduct problems. Farrington et al. found a strong interactive effect

between symptoms of HIA and child conduct problems on later criminal offending. They reported that the juvenile conviction rates for boys with ADHD and CD were roughly 46%. The conviction rates for boys with ADHD only, CD only, and nondisordered boys were 24%, 35%, and 13%, respectively. A similar pattern was upheld into adulthood as the ADHD comorbid CD group had a significantly higher rate of adult convictions than all other groups. Similar results were reported in a study of delinquency at the age of 17 (Lambert, 1988) and for adults (Loney, Whaley-Klahn, Kosier, & Conboy, 1983).

In a longitudinal design following up on earlier work, Moffitt (1990) examined the life course of 453 boys from the ages of 3 to 15. Again, four groups were defined at the age of 13 on the basis of delinquent behaviour and professional diagnosis of ADD. The developmental trajectories were recorded and measures of delinquency, childhood antisocial behaviour, verbal IQ, reading ability, and family dynamics were assessed. At age 13, the combined ADHD and delinquency group was found to have commenced their antisocial behaviour at a younger age, had their behavioural problems escalate at school entry, were more antisocial than other delinquents at every stage except for the onset of adolescence, and had delinquency problems persisting into adolescence. Those boys assessed as ADHD without delinquency showed only mild behaviour problems throughout their childhood while the delinquent only boys remained relatively free of conduct problems until they initiated it at age 13.

The evidence presented seems relatively clear that those who show symptoms of both ADHD and CD in early childhood are at a relatively higher risk for exhibiting antisocial behaviour in late adolescence and into early adulthood. The mixed ADHD and CD groups usually started earlier in their antisocial behaviour and their conduct problems are more severe and manifest themselves across a variety of settings. Szatmari et al. (1989) suggested that the

mixed group represents a hybrid having characteristics of both groups; like ADHD it has more developmental problems but like CD it had more demographic and family background correlates. The authors suggested it should be considered separately in future studies.

A scenario may be that pure ADHD children with psychosocial disadvantage become the mixed group. Lynam has conjectured that the co-occurrence of hyperactivity and conduct problems may represent a subtype of conduct disorder (Lynam, 1996). Lynam summarized the literature on persistent offending and suggested that children with symptoms of hyperactivity, inattention, and impulsiveness in combination with conduct problems are afflicted with a virulent strain of conduct disorder that can best be described as “fledgling psychopathy”. The evidence, although not complete, argues against any specific type or category. Instead, this pathway appears to be the result of an accumulation of symptomology or severity of ADHD (see Barkley, 1997) since ADHD is best viewed as the extreme of behaviour that varies throughout the population rather than a disorder with discrete determinants (Levy et al., 1997). This hypothesis would suggest that the more severe the case of ADHD, the greater the probability of CD (Thompson et al., 1996).

Comparing ADHD children with a mixed group of ADHD and CD makes it impossible to sort out whether differences are caused by the conduct disorder or are due to disorders in conjunction with ADHD. Similarly, a number of the instruments used in these studies rely on assessment tools and rating scales where there is a high correlation between hyperactivity and CD items (Szatmari et al., 1989). This can lead to misclassification. Unfortunately, the literature is unclear on whether the ADHD with CD type is a specific strain or whether it's a severe form of ADHD.

These results together suggest that the risk for future offending is greatest for children with hyperactivity in combination with other disruptive disorders. There is an almost universal finding that such histories can be elicited from the most serious adolescent and adult criminal offenders. At present, the evidence suggests that a combination of ADHD hyperactive subtype and severe early-onset CD is often a pre-requisite for sustained serious and violent offending. However, there is a need to test these relationships specifically to serious and violent juvenile offending versus as risk factors for general delinquency involvement.

Psychopathy in Children and Adolescents

The concept of psychopathy has been prominent in the field of forensic psychology for a number of decades. Historically, the concept of psychopathic personality has been used to refer to a constellation of affective, interpersonal, and behavioural characteristics that include shallow emotions, lack of remorse, egocentricity, superficial charm, manipulativeness, and a propensity to violate social and legal norms (Cleckley, 1976; Hare, 1998). Research with adult populations has consistently found a relationship between the severity, frequency, and versatility of antisocial behaviour with measures of psychopathy (see Hart & Hare, 1997). As such, the assessment of psychopathy has become a useful tool in determining the risk for future violent conduct (see Hart, 1998).

Although there are a considerable number of studies that have addressed the assessment of psychopathy in adult criminal populations, there are surprisingly few empirical studies examining the psychopathy construct as it applies to children and adolescents (Forth & Burke, 1998). A number of authors have considered conduct problems to be a developmental precursor to psychopathy (e.g., Lynam, 1996; Hinshaw, 1994). However, it has become clear that those individuals who are assessed as having conduct disorder problems do not best encapsulate the

construct of psychopathy as it has been put forth by Hare. Several researchers have since suggested that a subtype of CD that possesses unique traits is most likely to be the fledgling psychopath (see Lynam, 1998 or Frick, 1998).

With several researchers striving to assess psychopathy in both child and adolescent samples, a number of assessment instruments have been devised to fulfill this purpose. Most, however, have been modeled after the Psychopathy Checklist-Revised (Hare, 1991), the most widely utilized instrument for the assessment of psychopathy with adult offenders.

Forth and Burke (1998) reviewed 7 studies examining the assessment of psychopathy in incarcerated, probation, and community samples. Utilizing a cut-off score of 30 they reported base rates of between 18% and 35% of psychopaths in incarcerated youth samples, significantly greater than the probation or community population samples reviewed. The measurement of psychopathy has been found to be significantly correlated with the number of past violent offences ($r = .25$), age of onset for nonviolent criminal conduct ($r = -.33$), age of onset for first violent offence ($r = -.26$), and criminal versatility ($r = .35$) in a sample of young offenders even when items directly associated with antisocial behaviour were removed from the independent measure (Forth, 1995). In fact, significant correlations between measures of adolescent psychopathy and criminal history variables have been a robust finding in the literature (for a review, see Forth & Burke, 1998; Frick, 1998).

Forth and Burke (1998) re-examined age related differences in criminal behaviour from the Forth, Hart, and Hare study (1990). They divided their adolescent sample into three two and a half-year time periods and examined the frequency of offending for each period. Although few differences in psychopathy scores in nonviolent offending were noted during the three different age periods, group differences were significant for violent offences. The number of violent

offences for psychopaths increased as they got older and was significantly greater than the number of violent offences for nonpsychopathic offenders during each time period. The data suggested that violent conduct remains relatively persistent in psychopathic youth. Generally, children and adolescents assessed as psychopathic have been documented as the most frequent, severe, aggressive, and versatile of offenders (Lynam, 1997; 1998).

Burke and Forth (1996) also examined the relationship between psychopathy in youth and family background. They determined that behavioural measures, rather than interpersonal or affective measures of psychopathy, are most strongly related to overall family dysfunction in young offenders. A review conducted by Forth and Burke (1998) made it evident that parental rejection, antisocial personality, and substance abuse are the family background variables most closely linked to psychopathy. However, the authors concede that the links between abuse, neglect, and parental separation with psychopathy have not been consistently reported in the literature. Forth and Burke reported that antisocial parents, a family background of parental alcoholism, and inconsistent discipline are the most closely linked psychosocial variables to youth psychopathy. Whatever the case, there is certainly a lack of evidence that any one family variable is distinctly responsible for psychopathic traits.

Measures of youth psychopathy have also been found to be related to lower educational achievement (Brandt, Kennedy, Patrick, & Curtin, 1997), substance use (Mailloux, Forth, & Kroner, 1997), and institutional adjustment (Brandt et al., 1997). Furthermore, psychopathic adolescents have been found to perform more poorly on cognitive and behavioural impulsivity measures (Lynam, 1997) and have a greater responsivity to reward stimuli (Scerbo, et al., 1990) than nonpsychopathic adolescents.

In summary, psychopathy measures have been highly related to a number of criminal history and psychosocial problems in children and adolescents. This has also been clearly demonstrated for CD samples (see Hinshaw, 1994 for a review). The ability of the psychopathy construct to independently contribute to the understanding of severe antisocial behaviour in children and adolescence needs to be demonstrated if it is to be a valid assessment technique with youthful offenders.

Forth, Hart, & Hare (1990) constructed an 18 item modified version of the PCL-R in order to assess psychopathy in a sample of 75 young offenders incarcerated in a maximum security institution. Almost all (97%) of the sample received a diagnosis of CD. The modified PCL-R scores were found to be significantly correlated with the number of CD symptoms exhibited by the offenders. The strong relationship between measures of child/adolescent psychopathy and conduct disorder has been replicated numerous times since (Brandt et al., 1997; Christian, Frick, Hill, Tyler, & Frazer, 1997; Frick, 1998; Frick, O'Brien, Wootton, & McBurnett, 1994; Forth, 1995; Myers, Burket, Harris, 1995). For example, Forth (1995) reported significant correlations between the Psychopathy Checklist-Revised: Youth Version (PCL:YV; Forth, Kosson, & Hare, in press) and the number of CD symptoms in a young offender ($r = .52$) and community youth sample ($r = .75$).

The question therefore arises whether psychopathy is qualitatively different than CD. In the Forth and Burke (1998) review they proposed that youth diagnosed with CD all engage in socially deviant behavior, but that most CD youth do not possess the interpersonal traits that are typical of the psychopathic offender. Therefore, psychopathy in adolescence (Forth & Burke, 1998) was viewed as *qualitatively* different than CD and was not simply an interchangeable construct. This same position was purported by Frick with children (Frick, 1998). He contends

that CD is a heterogeneous group and that a specific subtype of CD youth best typifies the psychopathic adult.

In contrast, Skilling, Quinsey, and Craig (2001) have reported that a modified measure of the PCL-R had a corrected correlation coefficient of .92 with the number of CD symptoms in a sample of 1111 schoolboys. It is notable, however, that the methodology and measurement of psychopathy was insensitive to interpersonal and affective traits of the children. Therefore, their retrospective coding of the PCL-R is likely to only encompass behavioural components that are best reflected in Factor 2 items and CD symptoms. As such, their modified version of the PCL-R may not have been a true reflection of the psychopathy construct.

Most attempts to operationalize the construct of psychopathy in youth have relied heavily on the necessity of having an interpersonal or affective component that adds to the understanding of severe antisocial behaviour. O'Brien and Frick (1996) examined reward dominance in a subgroup of children with conduct problems, but without anxiety features. They concluded that this subtype of CD most closely approximated the construct of psychopathy and that reward dominance, in the absence of anxiety, is a unique feature of psychopathic children that distinguishes them from those youths with only CD.

Frick (1998) proposed an approach to subtyping CD in a manner that focuses on the child's interpersonal style. The Psychopathy Screening Device (PSD: Frick & Hare, 2001) was developed to assess each aspect of psychopathy examined by the PCL-R. In developing this measure, Frick and his colleagues (1994) obtained parent and teacher PSD ratings on a sample of 92 children. A principal component analysis revealed the presence of two factors: the first factor taps predominantly into impulse control and consists of 10 items while the second factor includes items related to callous and unemotional interpersonal style and consists of 6 items.

Testing on each of the two factors on the PSD suggested that the Impulse-Conduct problem factor (I/CP) was measuring a similar construct to that of ODD and CD. The I/CP scale was highly correlated with two measures of conduct problems and was able to differentiate between CD or ODD samples from other referred groups. In contrast, the Callous Unemotional component (CU) appeared to be measuring a different construct. The CU scale was not nearly as strongly related to conduct problem measures and was unable to differentiate CD and ODD children from normal samples. The CU scale was negatively correlated with measures of anxiety and sensation seeking. As such, a similar factor structure, with one behavioural and the other interpersonal/affective, emerged in the assessment of psychopathy in children, as has been reported with adults (Frick, 1998).

In furtherance of research in this area Christian et al. (1997) sought to identify a distinct group of conduct disordered children that resemble psychopathic adults. They examined a sample of 120 children between the ages of 6 and 13 ($M = 8.7$) who were referred to an outpatient clinic. Four clusters of children were revealed in their analysis of ODD, CD and CU traits. A grouping with ODD, CD symptoms with the presence of CU traits was found to designate a unique or psychopathic subgroup of antisocial children who exhibited a severe form of early antisocial behaviour. Specifically, the psychopathic conduct cluster group had a greater number of oppositional, aggressive, and covert property-destructive symptoms than either of the other conduct problem groups, as well as a significantly higher percentage of school suspensions, police contacts, and parents with APD.

As with previous researchers, Lynam (1997) developed his own archival assessment measure of psychopathy for adolescence. He then retrospectively examined 430 12 and 13 year old males. The Childhood Psychopathy Scale (CPS) was determined to be significantly

correlated with general and violent offences at the age of 10, criminal versatility at the age of 13, and self-reported and teacher-rated aggression and delinquency. This measure of adolescent psychopathy was found to be significantly higher in the stable/serious delinquent group than in either the delinquent or stable/nondelinquent groups. The authors concluded that the two-factor model of psychopathy used in the adult literature was important to understanding the nature of severe patterns of conduct problems in children.

Lynam was not able to effectively discriminate between ADHD with comorbid CD subjects from CD only subjects using his measure of psychopathy (Lynam, 1998). Nonetheless, he considered the ADHD plus CD subtype to be the most antisocial subtype and most consistent with the construct on adult psychopathy. The results are clearly consistent with previous positions that CD alone is not a precursor to severe antisocial behaviour but that a particular subgroup of CD is likely to account for the career criminal offender. In this case, Lynam (1998) asserts that CD with hyperactivity forms the basis for the fledgling psychopath.

There has been little predictive research to date that has examined the elements of psychopathy and a youth's risk for future criminal conduct. In Forth et al.'s (1990) original study they found that modified PCL scores for adolescents were not significantly correlated with general recidivism or the number of nonviolent offences in an adolescent population. PCL scores were correlated with previous violent convictions ($r = .27$), aggressive institutional conduct ($r = .46$), and violent recidivism ($r = .26$). Brandt and his colleagues obtained similar results. They reported no relationship between modified PCL-R scores and length of time before a new nonviolent offence but reported that high psychopathic offenders took the shortest amount of time to commit a new violent offence (Brandt et al., 1997). In addition, they reported that both the PCL-R Factor I and Factor II scores added a significant incremental contribution to the

prediction of new offences after all other demographic, criminal background, and psychometric variables had been controlled for. The CPS score in Lynam's study (1997) explained a unique proportion of variance to the prediction of delinquency, above other established predictors such as prior delinquent history.

Overall, there are some studies that have examined psychopathy in both childhood and adolescent samples that support the notion that psychopathy can be reliably measured. Although limitations of the various psychopathy measurement devices have been aptly documented (see Edens, Skeem, Cruise, & Cauffman, 2001), research continues to indicate that measures of psychopathy in children and adolescence can be reliably obtained and are consistent with the syndrome of psychopathy found in adult samples (Forth & Mailloux, 2000; Frick, Barry, & Bodin, 2000; Kosson, Cyterski, Steuerwald, Neuman, Walker-Matthews, 2002). The extent to which these measures add to our understanding of the development of antisocial conduct and predict offending into adulthood is not as clear.

Classification

With scores of individual factors as well as syndromes being linked to criminal conduct it is not surprising that attempts have been made to present typologies consistent with research findings. The challenge of classification is that it must be capable of organizing what would otherwise be an exhaustive array of variables to explain criminal behaviour, while at the same time being sufficiently general to be consistent with theoretical positions that are supported from the literature.

Medical Model. In the past, efforts to classify criminal conduct have been consistent with the medical model of psychopathology. The medical model of psychopathology consists of two components. The first involves the general hypothesis that the etiology of psychopathology

results from organic dysfunctions while the second involves classifying psychopathologies in the same manner as physical diseases. Although not definitive, there is little doubt that organic factors such as those espoused in genetic, biochemical or neurophysiology models have been implicated in hyperactivity as well as anti-social acting out behaviours. Thus, at the most basic level, the medical model's first component has some support as applied to psychopathology as it seeks to discover the links between physiology and behaviour.

The second component of the medical model dealing with diagnosis is more problematic. In order to simplify the task of understanding, researchers assume that there are classes in nature that can be revealed through observation. Difficulty results when the diagnosis has implications for both etiology and prognosis. The assumption is that the organic etiology for each separate class is the same. This is an overgeneralization of the medical model that has, unfortunately, permeated the literature of psychopathology, and explanations of criminal conduct in particular.

Towards Developmental Trends. An alternative approach to the medical model is the developmental perspective. The need for this perspective has arisen partly due to shortcomings of the medical model but also because of the lack of success of previous classification schemes.

There has been a strong tradition of using typologies for offenders that are theory driven and focused predominantly on the form of offences committed (e.g., Chaiken & Chaiken, 1984; Farrington, Snyder, & Finnegan, 1988; Gibbons, 1962; Wolfgang, Figlio, & Sellin, 1972). To date, there is limited evidence that there is any "specialization", especially with juvenile offenders. Most classification schemes have targeted juvenile offenders (e.g., Jesness & DeRisi, 1971; Megargee & Bohn, 1979; Quay, 1987) and have differed depending on whether they are based on official criminal records (Sheldon & Chesney-Lind, 1993; Smith, Smith, & Noma, 1984) or both official records and self report (Farrington, 1983). Research on these classification

systems has focused almost exclusively on institutional adjustment (Van Voorhis, 1997) and data that suggests these typologies can be predictive of future reoffending is lacking (Andrews & Bonta, 1998).

In recent years, classification schemes have combined features of offence types and offender types (e.g., Dunford and Elliott, 1984; Huizinga, Esbenson, & Weiher, 1994; Sheldon & Chesney-Lind, 1993). More detailed data records and longitudinal analysis have allowed the development of typologies or “trajectories” based on the beginning, persistence, and ending of delinquent careers (e.g., Moffitt, 1993). For example, Loeber and his colleagues (Loeber et al., 1991) proposed a classification of juvenile offenders with 7 types: (1) stable nondelinquents, (2) starters, (3) stable moderately serious offenders, (4) escalators, (5) stable high serious offenders, (6) de-escalators, and (7) desisters. Working from the Seattle Social Development Project (SSDP) dataset Hill et al. (1999) demonstrated the existence of four distinct trajectories of violent offending from the age of 10 to 21: i) chronic, ii) desister, iii) late onsetter, iv) and non-offender. Similar trajectories or pathways have been demonstrated in longitudinal studies completed by Nagin and Land (1993) and Fergusson, Horwood, and Nagin (2000).

Identifying progressions and patterns of offending over time is important because it illuminates the developmental pathways of criminal offending. If a distinct group of offenders who follow a precise trajectory of behavioural problems can be identified, then this information can be used for early identification and discrimination for determination of resource allocations (Tolan & Gorman-Smith, 1998). There is a growing body of literature to support the general positions of the developmental model.

Patterns in Offending History. A major finding that has aided in the developmental approach in explaining criminal behaviour has been the study of the natural histories of antisocial

behaviour. It has consistently been shown that patterns in the development of antisocial behaviour can be differentiated in many ways. Both Loeber (1982) and Loeber and LeBlanc (1990) have found that the timing of the first signs of severe behavioural problems, the escalation in the seriousness of delinquency, and the versatility in early delinquent behaviours are able to distinguish future risk.

A similar but equally robust finding is the age-crime relationship. It has been repeatedly found that crime prevalence increases during early adolescence and peaks in late adolescence (e.g., Moffitt, 1993). This is not only the case for general delinquency, but in almost all research cohorts the incidence and prevalence of violent and serious delinquency reaches a peak during adolescence and early adulthood and is more frequent in male than female populations (Elliott, 1994; Farrington, 1986; Moffitt, 1993). In fact, most youthful offenders desist involvement in offending by early adulthood regardless of their level of involvement during adolescence (Elliott, 1994; Loeber & LeBlanc, 1990). In this sense outcomes can vary substantially among those showing antisocial behaviour during adolescence.

Characteristics of the Chronic Offender. The work of Wolfgang (Wolfgang et al., 1972) has been pioneering to the notion that chronic offenders, although constituting a small percentage of all offenders, commit the majority of all forms of delinquent acts. A cohort from Wolfgang's Philadelphia study was selected and followed up after 20 years. Wolfgang (1983) found that 15% of the participants were responsible for nearly 53% of all crime committed by the cohort. This pattern of a small percentage of offenders contributing to the majority of criminal acts has been replicated in several large scale longitudinal studies (Elliott et al., 1985; Farrington 1983; Guttridge, Gabrielli, Mednick, & Van Dusen, 1983; Howell, Krisberg, & Jones, 1995).

Loeber, DeLamatre, Keenan, and Zhang (1998) reviewed the data concerning the contribution of chronic offenders to the total volume of delinquency in various populations. After examining studies that utilized several different measures and definitions of delinquency they reported that the percentage of chronic offenders in any sample varied from 7% to 25%. More importantly, chronic offenders accounted for a relatively higher percentage of violent offences in comparison to the percentage of all crimes. Therefore, these findings support previous research that revealed that the most active criminals are not only the ones who commit most of the crimes, but are also the ones who account for an even greater proportion of serious and violent criminal acts (Moffitt, 1993; White et al., 1990). This, of course, results in most violent and serious offenders being highly concentrated in the population of repeat offenders (Loeber et al., 1998; Weitkamp, Kerner, Schindler, & Schubert, 1995).

It is evident that those who engage in the most frequent criminal activity (Blumstein, Cohen, Roth, & Visher, 1986; Tracy, Wolfgang, & Figlio, 1990), engage in serious antisocial conduct or commit a wider variety of crimes (Loeber & Hay, 1996), are at greater risk for future crime, and for committing more violent acts than those that do not (Cohen, 1986; Farrington, 1991; Loeber, 1982; Wolfgang, et al., 1972). Thus, serious and frequent offending have been described as being dependent on the same risk factors (Elliott et al., 1985; Farrington, 1991; Thornberry et al., 1995; Tolan & Lorion, 1988), despite the fact that they are not interchangeable phenomena. It would seem that the frequency, seriousness, and versatility of criminal behaviour are important parameters to consider when researching criminal careers (Tolan & Gorman-Smith, 1998) and specifically when using behavioural history as a risk factor for future serious and violent offending.

Stability. Many pathways have been proposed that focus on the timing of behavioural problem onset (see Elliott, Dunford, & Huizinga, 1987; Farrington, 1989; Le Blanc, 1996; Loeber & Leblanc, 1990; Moffitt, 1993; Patterson, Capaldi, & Bank, 1991; Tolan, 1987). These theorists maintain the central premise that an orderly series of behaviours, that are marked by increasing seriousness, ultimately culminate in the persistent involvement in antisocial behaviour. Essentially, they argue that there is a specific behavioural sequence from early school age children until late adolescence. Given the importance of this premise, both the stability of conduct problems from childhood to adolescence and the age of onset of conduct problems are essential elements for identifying the chronic offender and distinguishing them from other offenders.

One of the first significant findings that gave credence to the developmental approach in explaining criminal patterns was the strong stability of aggression over time (Farrington, 1991; Olweus, 1979). Several researchers (Chung et al., 1999; Loeber, 1990; Loeber & Hay, 1996; Olweus, 1979) have commented on the remarkable continuity between early measurement ratings of aggression and subsequent measures of aggression. Further, numerous studies point to high correlations between various temperaments at very young ages and long-term follow-up of these same characteristics (Caspi, Elder, & Bem 1987; Farrington, 1991; Olweus, 1979; Mannuzza et al., 1993). This again suggests that there are early developmental risk factors for those who later go on to long criminal careers.

A consistent finding in the literature is that serious antisocial behaviour is predictable from a childhood and adolescent history of antisocial, aggressive, and hyperactive behaviour (Farrington, Loeber, Elliott et al., 1990, Huesmann, Eron, Lefkowitz, and Walder, 1984; Huesmann & Eron, 1992; Loeber, 1990; Loeber & Dishion, 1983; Moffitt, 1990; Robins, 1978).

Interestingly, it appears that these relationships hold true when antisocial behaviour is measured as early as preschool (White et al., 1990).

Olweus (1979), in his classic review of 16 studies, found that the average correlation between longitudinally measured aggression was .63, with the correlations decreasing slightly at each interval. Nonetheless, aggression measured from age 10 to 18 had a retest correlation of .49. In addition to these correlations, Olweus pointed out that marked individual differences in habitual aggression can manifest themselves as early as age 3. Later studies have tended to find lower, albeit still impressive, relationships between ratings of aggression over time. Patterson (1992), for example, reported that only one out of three highly aggressive children failed to remain rated as highly aggressive nearly 10 years later; while Huesmann (Huesmann et al., 1984) reported that the stability coefficient of aggression over a 22-year interval was .50 for boys.

It is not surprising given what is known about the stability of personality features that aggression may become more stable with age. In a comparison of stability coefficients Loeber (1982) suggested that the magnitude of coefficients increase with age. The obvious interpretation being that any change in aggression is likely to take place early on in life, but that once adolescence hits, aggression becomes more stable. Loeber and Hay (1996) later replicated this finding.

The relationship between aggression in childhood and the likelihood of future violence in female cohorts is not as clear. Several studies have shown that the stability of aggression over time tends to be at least as high for females (Cairns & Cairns, 1984; Elliott, 1994; McCord & Ensminger, 1995). This finding has not been consistent. White (1992) suggests that early violence ratings in female adolescence were either not strong predictors or failed to reach significance levels in predicting future violence.

Not surprisingly, aggressive childhood behaviour has not only been consistently predictive of later aggressive ratings but also of later violent conduct itself. McCord and Ensinger (1995) examined a sample of youths and found that half of the grade nine boys rated as aggressive by their teachers at the age of 6 were arrested for a violent crime by the age of 33, compared with a third for the non-aggressive group. Huesmann et al. (1984) found that measures of aggression at the age of 8 had significant correlations of .24, .21, and .25 at the age of 30 with any criminal conviction, serious conviction, and self reported aggression, respectively. In addition, highly aggressive males at age 8 were more than twice as likely to be convicted of a serious crime by the age of 30. Peer rated aggression at the age of 8 has also been found to predict multiple offending 12 years later (Pulkkinen, 1983) while teacher rated aggression at 10 has been predictive of violent offending 16 years later (Stattin & Magnusson, 1989).

Retrospectively, 70% to 90% of violent offenders have remarked that they had been highly aggressive when young (Loeber & Stouthamer-Loeber, 1987). Quite simply, early aggressive behaviours are predictive of future serious antisocial conduct (Farrington, 1994; Huesmann et al., 1984; McCord, 1994; Olweus, 1979; White, 1992).

Although aggression can clearly be labeled as antisocial behaviour, other measures of early antisocial conduct have been found to be stable from early childhood to late adolescence. In a multi-wave longitudinal study assessing boys in grades 4, 6, and 8, antisocial behaviour was assessed by both parent and teacher ratings. The stability coefficient for this trait remained above .90 for each two-year interval (Patterson, 1992). In addition, the data from the Oregon cohort found that the more deviant the boys were at age 6, the greater the risk was for early involvement with the justice system. As such, these trait measures were highly stable over a five-year period, predicted later delinquency, and predicted the time of the onset of delinquency.

Secondly, the more extreme the trait score at an early age the more at risk the individual was for an early arrest and chronic juvenile offending. Farrington (1989) has shown that participation in a variety of rule breaking behaviours from ages 8 to 14 predicted later violence in males. Later, Farrington et al. (1990) reported the correlation between antisocial tendency at age 10 and 32 was .30.

The research is consistent in suggesting that continuity of aggression and other overt forms of antisocial behaviour are highest for those youths whose behaviours are at the extremes. Consequently, those youths whose early antisocial behaviour is frequent (Farrington, 1986; Robins, 1978) and starts at an early age (Farrington, Loeber, Elliott et al., 1990; Loeber, 1990) are at greatest risk for becoming a serious and violent offender. Furthermore, children who engage in a variety of antisocial behaviours (Robins, 1978) or commit these acts in multiple settings (Schachar et al., 1981) have a higher probability of becoming a chronic delinquent. Loeber (1982) postulated that if these characteristics were combined they would be even more predictive. Thus, individuals who display the most severe problems at the earliest ages and in multiple settings tend to be the persistent, chronic, and more versatile offenders later on in life (Farrington, Loeber, Elliott et al., 1990; Loeber, 1982; Loeber, 1990).

Temperament. Manifestations of antisocial behaviour can emerge early in life and remain present for some time. Several studies have shown that it is not just measures of early antisocial behaviour and aggression that are predictive of later problems but that early personality and temperament variables such as temper tantrums, disruptiveness, defiance, and impulsivity significantly predict adolescent delinquency or adult criminality (Loeber, 1982; Olweus, 1979).

Caspi et al. (1987) found that childhood ill-temperedness is correlated with similar personality attributes across the lifespan and that those who are the most ill-tempered as boys will most likely be the most ill-tempered as men. White et al. (1990) investigated a cohort of children from the ages of 3 to 15 at two-year intervals. They found through discriminant function analyses that being defiant or disruptive at the age of 3 best predicted delinquency at 11. In particular, the difficult to manage criteria correctly classified antisocial behaviour 8 years later almost 90% of the time. This was similar to the results found by Schwartz, Snidman and Kagan (1996). They found that measures of 3 year olds' difficult temperament predicted delinquency and aggression at 13.

In another study by Caspi and his colleagues, the precise relationship between the construct of lack of control and externalizing problems was examined (Caspi, Henry, McGee, Moffitt, & Silva, 1995). They found that measures of self control at ages 3 and 5 showed significant correlations with antisocial behavior at the age of 9 and attention problems and conduct disorder at the age of 13. In addition, the measure of constraint was found to differentiate between repeat offenders and one time offenders as well as violent offenders and non-violent offenders. This furthers earlier work that found that signs of restlessness, inattention, and negative emotionality were remarkably consistent from age of 9 to 15 (Caspi et al., 1994). Caspi's work suggests that crime proneness cannot be determined by a single tendency from childhood but requires multiple psychological components. In particular, across different samples, Caspi and his colleagues have suggested that proneness towards criminal activity is defined by both low constraint and negative emotionality (Caspi, Henry, McGee, Moffitt, & Silva, 1995).

There is mounting evidence that hyperactivity relates to the early onset of conduct problems that greatly increases the risk for youthful offending (Loeber, Green, Lahey, Christ, & Frick, 1992). Richman, Stevenson, and Graham (1982) reported that 62% of 3 year olds exhibiting discipline and impulsivity problems at the age of 3 showed them at the age of 8 whereas Campbell and Ewing (1990) showed that 67% of those at the age of 6 exhibiting similar problems showed them at the age of 9. Like aggression, impulsivity appears to be a relatively stable personality construct.

Moffitt (1990) examined the link between Attention Deficit/Hyperactivity Disorder (ADHD) symptoms during childhood and later delinquency and found that 27% of delinquent boys had these symptoms versus 4% of nondelinquents. She noted that 54% with hyperactivity symptoms in her sample were considered delinquent and that this group had more chronic and serious involvement in delinquent activities than nondelinquents. Similarly, Farrington (1991) found that 37% of nonviolent frequent offenders and 34% of violent offenders were assessed as impulsive at ages 8-10. In contrast, 20% of nonoffenders were impulsive. Hawkins et al., (1998) utilizing the SSDP data found that individuals identified by their teachers or parents as hyperactive at 10, 14, and 16 had twice the risk of violent behaviour by the age of 18. Overall, hyperactivity/impulsivity has been consistently linked as a potential precursor to later criminal conduct (Loeber & Schmalting, 1985).

Although it seems that early aggression might be the feature most related to later antisocial behaviour, Magnusson and Bergman (1990) have argued that aggression is only associated with crime when it is part of a constellation of problem behaviours. For instance, additional research has found that the combination of attention problems and aggression relates strongly to delinquency (Cadoret & Stewart, 1991; Loney et al., 1983). It is evident that

constellations of antisocial behaviour and negative temperament at early ages, and in extremes, are important risk factors for future delinquency. The exact nature of these interactions is unknown.

What needs to be emphasized is that although aggression, impulsivity, inattention, and hyperactivity may all be risk factors, they are not sufficient factors to determine chronicity of offending. In a re-examination of an earlier longitudinal data Fergusson et al. (1996) reached a number of interesting conclusions. They conjectured that the stability of behavioural problems has likely been under-estimated in the past. Their own data revealed that 42% of subjects with early onset of problems failed to show conduct or oppositional disorder during their adolescence. This supports the earlier findings from Robins (1978) that antisocial childhood behaviour may be a necessary condition for antisocial personality but not a sufficient one. Research is relatively consistent in asserting that a significant proportion of aggressive, defiant, and impulsive boys are at risk for violence and serious criminal activities. It needs to be stressed that even those who show the most aggressive tendencies at an early age have a low overall probability of committing future violent acts.

It remains remarkably difficult to predict who among those that show high aggression at an early age will go on to be involved in serious violent crimes. Even though population patterns can be described, the application of this knowledge to individual decision making has been limited (Land, 1992). As such, factors that seem to predispose children to chronic offending are likely malleable (Hawkins et al., 1998). As the general personality and social psychology approach would suggest, there is much more involved than simply identifying a single dimension or trait. If there is stability over time, then the task for forensic psychology is to determine why this stability holds even though environmental changes persist throughout the lifespan; and if

these factors are adaptable, what initiates this transformation. It is likely that a variety of factors interact to promote or help desist these early temperamental tendencies.

Age at Onset. Most authors have based their developmental trajectories on the differences found among offenders in their age at onset of serious delinquent behaviour. Typically, offender trajectories have depended on whether they were childhood or adolescent onset offenders (e.g.s, Moffitt, 1993, Hill et al., 1999). The literature has definitively distinguished between childhood and adolescent onset of problem behaviours as representing two very different trajectories of late adolescent and adult offending (Moffitt, 1993; Patterson et al., 1989).

Moffitt (1993) as well as Patterson et al. (1991) have argued that those exhibiting delinquency at a very young age are likely to be showing a progression from childhood aggression and other behavioural problems. They argue that this early starter is manifesting behaviour that is an early form of adult criminality. Research has backed this proposition by documenting that chronic or career criminals are different from nonoffenders and other, less serious offenders, in the age of initiation into antisocial behaviour (Elliott, 1994; Farrington et al., 1990; Moffitt, 1993; Patterson et al., 1991; Tolan, 1987). Boys arrested early in life tend to be most at risk for chronic offending, violence, and adult criminality (Blumstein et al., 1986). Mitchell and Rosa (1979) found that antisocial behaviours such as theft and vandalism between the ages of 5 and 15 predicted violent behaviour into adulthood. Thus, the onset of criminal behaviour was an important factor in determining the later life course of criminal behaviour.

Robins (1966), in a groundbreaking retrospective study, reported that men with histories of serious criminal offences had more extensive childhood antisocial behaviour problems. Nagin, Farrington, and Moffitt (1995) reported that serious offenders were convicted earlier and

at higher rates in early adolescence than nonserious offenders, whether they were persistent offenders or not. Furthermore, in a review of three databases, Stouthamer-Loeber, Loeber, Huizinga, & Porter (1997) found that 27%, 47%, and 19% of serious offenders had committed a serious criminal act by 12 years of age while 85%, 65%, and 65% had committed one by the age of 14. Thus, the vast majority of persistent offenders commit their first serious offences between the ages of 7 and 14.

Loeber contended that persistent offenders often start with predelinquency problem behaviours that escalate to serious and violent antisocial behaviour. According to his developmental model, there is a convergence of both aggressive behaviour and concealing behaviour patterns into juvenile chronic offending (Loeber et al., 1998). Thus, early age of onset is seen as a crucial and necessary developmental precursor to serious and violent antisocial behaviour.

Tolan and Thomas (1995) found through a longitudinal study that those who had an antisocial onset before the age of 12 had two to three times the rate of serious offending 3 years after onset than did those starting after the age of 12. Interestingly, only 3% of the late-onset group showed serious offending compared with 13% of the early-onset group. Similar patterns were reported for females. It is noteworthy, that in this sample, age at onset was not the only predictor, yet it still made the most significant contribution to explaining chronic serious involvement when subjected to a regression analysis. So although age at onset contributed to the explained variance, it did not supplant other predictors such as family characteristics, peer deviance, and antisocial beliefs in the prediction of future delinquency.

Tolan and Thomas (1995) have put forth a dynamic relationship between age of onset and predictors of delinquency. They suggest that early onset offenders are similar to late onset

offenders in the predictors of later delinquency. Thus, once delinquency started there were no differences in risk predictors between the two groups. This has also been found in a study by Leblanc and his colleagues (LeBlanc, McDuff, Charlebois, & Gagnon, 1991). In contrast, in two studies utilizing the SSDP data (Chung et al., 1999; Hill et al., 1999) a variety of factors at ages 10 to 12 and at 15 distinguished desisters from chronic offenders as well as nonoffenders from late onsetters. Thus, risk factors differed according to offender trajectory.

Early onset of antisocial behaviours has often been predictive of future antisocial conduct but it is also clear that early onset of violence is specifically able to predict chronic and serious violent offending (Farrington, 1991; Piper, 1985; Thornberry et al., 1995; Tolan & Thomas, 1995; White, 1992). Even though the research has not looked as extensively at age at onset of violent behaviours, it seems clear that early onset is associated with greater seriousness and chronicity of violence. In fact, studies have shown that virtually any form of involvement in early antisocial activities is associated with a greater risk for serious and violent offending. There is substantial evidence that earlier onset, particularly when it involves a pattern of increasingly serious conduct, play a major role in determining the later risk for serious offending. As such, age of onset need to be utilized in practical settings as a risk factor for future reoffending.

Developmental Criminology

Findings surrounding the stability of antisocial conduct and temperament, as well as the importance of the age of onset of these characteristics, have provided the impetus for applying developmental models to the field of criminology. At its essence, developmental criminology is a perspective that attempts to explain the distinct pathways or trajectories that have been uncovered in criminal offending. It is based on the developmental psychopathology literature.

Developmental psychopathology has evolved into a legitimate alternative to the medical model in the explanation of psychopathology and, in particular, in the explanation of childhood mental health disorders. The fundamental element of these developmental perspectives is their ability to conceive of the concepts of disorder, deviance, or maladaptation as a “pathway” as opposed to the medical model that views disorder primarily as a rigid or static phenomenon. In fact, most of the fundamental implications of the developmental model of psychopathology can be encapsulated in the concept of “pathways” and the framework the metaphor provides.

Key principles have been put forth in the developmental perspective that are illustrated by the “pathways” metaphor (Srouffe, 1997). The concept of pathways, first and foremost, implies that there is a potential to deviate from a normal course of development over time. As a result, the understanding of both normative and maladaptive development is essential to developmental psychopathology. Pathways also implies that different routes may lead to the same outcome and that different outcomes may arise from the same routes. Similarly, the field of developmental psychopathology takes into consideration that different routes with different influences can lead to similar patterns of maladaptation and that those who follow similar pathways may still diverge at any point. Furthermore, divergence from a path can happen at any point in time and deviations from a normal pathway can return to a normal pathway of functioning. However, the more time one spends on a pathway the more probable it is to be followed.

The “pathways” metaphor (see Srouffe, 1997) has contributed to the re-conceptualization of pathology as a journey rather than a destination. If developmental psychopathology is a general approach to understanding relations between development and its maladaptive deviation, then the concept of “pathways” has provided a framework to conceptualize development, allow

unique interpretations of past findings, and provided impetus into the exploration of the processes of maladaptation. As a result of this perspective, the prevailing model of criminology has been challenged, a resurgence in the perceived need for longitudinal research has emerged, and the potential of different treatments, interventions, and prevention strategies has been recognized.

The field of developmental criminology has grown rapidly in recent years and has added to our understanding of criminality by increasing our overall understanding of criminal conduct in a general personality and social psychological perspective of criminal behaviour. More precisely, understanding the precursors to the onset of antisocial behaviour and the factors that contribute to the desistance of delinquency is a major goal of developmental criminology. One of the principles of the PIC-R model calls specific attention to the maturational and developmental factors that moderate the influence of rewards and costs on behaviour (Andrews & Bonta, 1998).

A common assumption in the developmental criminology literature is that antisocial behaviour, when it does develop, develops in an ordered fashion (Caspi et al., 1987; Frick et al., 1992; Gottfredson & Hirschi, 1990; Loeber et al., 1993, Moffitt, 1993). Determining and understanding the developmental pathways should theoretically offer better prediction and prevention of serious antisocial behaviour than the simple assessment of behaviour at any one moment in time. Tolan and Gorman-Smith (1998) argue that the premise of orderly and differentiated development in serious and violent conduct rests on three fundamental areas of research:

- (a) identification of basic behavioural dimensions or parameters of development,
- (b) specification of the steps or sequences in developmental pathways toward violent and serious delinquency and,
- (c) identification of the predisposing and precipitating contributors to such

development, including specification of their predictive power, accuracy, and utility.(p. 68-69)

Developmental Trajectories

The main issues in the search for the pathway of a criminal career continues to be establishing how many pathways there are towards delinquent behaviour, what factors are able to distinguish these pathways, and what sequences of development are presented in each. These issues have undergone considerable debate in the literature (Blumstein et al., 1986; Gottfredson & Hirschi, 1986; Loeber & Hay, 1996; Loeber & Leblanc, 1990, Nagin et al., 1995; Tolan & Loeber, 1993). In continuation with this research, Moffitt (1993) presented a developmental taxonomy of criminal behaviour. Moffitt defines the *life-course-persistent* offender as a small group of persons engaging in antisocial behavior of one sort or another at every stage of life. Across the life course these individuals exhibit changing manifestations of antisocial behaviour: aggression at an early age, conduct problems by the age of ten, delinquency during adolescence, serious criminal patterns in the twenties, followed by domestic and more sophisticated criminal activities at age thirty and beyond. Moffitt argues that, regardless of the observed behaviour, the underlying disposition remains the same, but its expression changes form as new social opportunities arise at different points in development. The theory of life-course-persistent antisocial behaviour predicts continuity across the life course but allows that the underlying disposition will change its manifestation when age and social circumstances alter opportunities.

In contrast, the *adolescent-limited* type of offender in Moffitt's taxon constitutes a larger group of persons who are only temporarily involved in antisocial behaviour. Individuals showing the adolescent limited pattern are those who develop transitory increases in antisocial behaviours during the period of adolescence. The difference being that the antisocial behaviour

of this group is discontinued in late adolescence or early adulthood (Moffitt, 1993). Thus, both offender types have a distinct etiology and life-course.

Moffitt argues for three mechanisms that maintain the probability of life course persistence of antisocial behaviour. Contemporary continuity, cumulative continuity and narrowing options for change are all identified as potential mechanisms in which personality traits can interact with the environment to produce consequences throughout one's lifespan. Contemporary continuity arises if the life course persistent person continues to carry into adulthood the same underlying constellation of traits that got him into trouble as a child (Moffitt, 1993). Huesmann and Eron (1992) proposed that developmental processes at an early age underlie all antisocial and criminal behaviour. Similarly, Farrington (1992) has argued that different acts following each other may be different manifestations of the same underlying construct at different ages. As well, different acts may be different behavioural manifestations of the same underlying construct at different ages and be part of a larger developmental sequence where one act is simply a "stepping stone" to facilitate another.

Cumulative continuity is the snowball effect that one problem or difficulty might have on the individual's environment and their reaction to it. Initial support for these mechanisms was provided by Caspi et al. (1987). Their longitudinal follow-up of ill-tempered children and later adult psychosocial development found evidence for both contemporary and cumulative sequences. They argued that both cumulative and interactional continuity was responsible for progressive accumulation of consequences and maintenance of responses from others during reciprocal social interactions.

Several other authors have reproduced a similar taxon to explain developmental course of offending throughout the lifespan, although each has offered subtle variations on similar themes.

Patterson (1992) outlined a model describing both early and late starters while Nagin et al. (1995) identified four distinctive offending trajectories in a sample of 403 British males: a group without any convictions, adolescence-limited, high-level chronic, and low-level chronic. Nagin et al.'s most salient finding was that after a long-term follow up, adolescence-limiteds were indistinguishable from the never convicted and substantially better than those of the chronic offenders on a variety of social and criminal measures.

Loeber and his colleagues have consistently argued that the developmental pathways approach explains the involvement in crime for most delinquents over various time periods (Loeber et al., 1998). Loeber has offered three pathways of development towards delinquency. Two pathways are derived from overt actions that respectively represent aggression and authority defiance, with the other being covert actions (Loeber & Hay, 1996). These authors demonstrated that the three pathway model could account for most delinquent behaviour patterns using the Pittsburgh Youth Study data. They found that there was a distinguishable age of onset for each component in each pathway with less serious behaviours starting earlier. In addition, earlier onset was related to progression in a given pathway and an increased likelihood of involvement in all three pathways (Loeber et al., 1998). Tolan & Gorman-Smith (1998) later replicated Loeber's pathways utilizing both the National Youth Survey dataset as well as the Chicago Youth Development study data.

Hill and other researchers utilizing the Seattle data (Hill et. al., 1999) have identified four distinct trajectories of child and adolescent violent behaviour: (1) chronic offenders, (2) desisters, (3) late onset offenders, and (4) nonoffenders. Again, the chronic offender is characterized by early onset of violent offending and more serious violent involvement over their entire adolescence. In contrast, desisters begin violent behaviour at a relatively young age but ceased

any further involvement in serious violence by the age of 16. Meanwhile, late-onsetters were characterized as having no serious violent behaviour prior to the age of 15 but then displaying an escalating rate of violent conduct that rivaled the chronic offender by the time they entered adulthood. Nonoffenders, in contrast, never showed any involvement in serious violent conduct.

From the research it seems clear that there are at least two distinct contrasts among the trajectories of child and adolescent delinquency that require examination. The chronic offenders versus those that desist and the late-onsetters versus those that have never commenced serious delinquent conduct. Prevalent inquiries in the literature have become not only the identification of risk factors for chronic offending but also the identification of “protective” factors that may prevent youths that initially show signs of substantial behavioural problems from moving towards a criminal career. Similarly, questions are now focused on what factors exist that protect individuals from ever commencing criminal conduct and what risk factors influence those who display late-onset characteristics. As such, it is one of the main purposes of the developmental literature to determine the risk and protective factors of each of these trajectories.

Regardless of the number of trajectories and pathways identified, there are two contrasting theories that profess to explain the existence of the career criminal or chronic offender type. These have both emerged from longitudinal studies and include the latent trait as well as the life-course models.

Theories of criminal career or latent trait models both implicitly assume that illegal behaviour is a manifestation of an underlying disposition. The latent trait model, however, assumes the existence of a single, continuous dimension of propensity to commit crime. In support of a latent trait model Rowe, Osgoode, and Nicewander (1990) cited evidence of the generality of deviance, the temporal stability of personality features associated with crime, and

genetic influences. After reanalyzing data from four well known studies they determined that it was not necessary to invoke a categorical distinction between offenders and nonoffenders but that a model assuming a continuous underlying dimension fits quite well.

Latent trait perspectives (e.g., Gottfredson & Hirschi, 1990) suggest that, once detected, the trait is relatively impervious to change. Thus, those who possess it will be more likely to commit antisocial acts at every life stage. In opposition to latent trait perspectives is the life-course or state dependence models. This perspective suggests that those who show early signs of a latent trait can undergo mediating effects from their environment that influences whether they will continue to be involved in antisocial activities throughout their adult life. For example, Wright, Caspi, Moffitt, & Silva (2001) offered empirical support for four processes that can be organized into four hypotheses concerning persistent criminality: (1) enduring criminal propensity remains stable from youth to adulthood: (2) social ties formed in adulthood deter criminal behaviour; (3) criminal propensity brings about crime by disrupting prosocial ties and; (4) social ties vary as a function of criminal propensity thereby causing prosocial ties to deter crime and antisocial ties to promote crime most strongly for those most at risk. Thus, in this model prosocial ties promote or deter persistent offenders.

A more recent evaluation failed to provide definite evidence in favour of either the latent trait or career-course perspectives. In the end, a mixed model having features of both was proposed as being an adequate fit for the data. (Cernkovich & Giordano, 2001). In contrast, Wright et al. (2001), provided evidence that criminal propensity brings about antisocial conduct mainly through its indirect effects on social relationships. This suggests that ignoring the effects of an individual's social environment of any proposed underlying effects would be faulty.

Distinguishing Between Trajectories. It is imperative in any typology that characteristics unique to each category be identified. Much of the literature on developmental trajectories of offending has focused on differentiating the course and development of each proposed category. Most, of course, have focused on identifying those factors that differentiate chronic offenders from other categories. There is, however, a growing body of literature that suggests that the risk factors associated with each individual trajectory may be quite different.

For chronic offenders, measures of verbal abilities and behavioural impulsivity consistently differentiate them from adolescent limited or adolescent onset offenders (Moffitt, 1990; Moffitt, Lynam, & Silva, 1994; Patterson & Yoerger, 1993) while adolescent onset antisocial behaviour has been more closely linked to delinquent peers (Caspi et al, 1995; Patterson & Yoerger, 1993; Simons, Wu, Conger, & Lorenz, 1994). The link between antisocial peers and late-onset offenders was further supported by the research group out of Seattle (Chung et al., 1999). They reported that high aggressiveness, hyperactivity, and high antisocial bonding at age 10 significantly predict chronic and desister trajectories. That is, those with early onset violent offending persisted into chronic offending if at age 10 these risk factors were present. Further, prosocial and antisocial peer opportunities at age 10 as well as antisocial attitudes differentiate those that are late-onsetters from those that never engage in criminal violence. Hence, nonoffenders at the age of 15 will likely continue to be nonoffenders, if these risk factors are not present.

Another group of researchers (Jeglum Bartusch, Lynam, Moffitt, & Silva, 1997) sought to determine if factors related to self control could distinguish between life-course persistent and adolescent limited offender samples. Their findings showed that high scorers on childhood onset versus adolescent onset had more symptoms of hyperactivity, more impulsive personality

features as a young adult, and more violent crimes in late adolescent and early adulthood. Nagin et al. (1995) reported that high level chronics were found to have the only indicators of restlessness and concentration problems from the age of 10, again, supporting the notion of a personality based underlying trait found in the Hill et al. (1999) study.

The developmental perspective of criminal offending is gathering support from recent longitudinal research. There is considerable evidence for different offender trajectories, for these trajectories to have unique precursors, and for multiple factors to play a role at different times throughout each trajectory. Unfortunately, the application of these findings to individual risk is far less substantiated and remains speculative (Tolan & Gorman-Smith, 1998). The determinants of moving along any particular pathway and the extent to which individuals do not follow a specified pathway have not been adequately specified (Loeber and Hay, 1996; Tolan & Thomas, 1995; White et al., 1994). Further, most studies to date have focused exclusively on males. It would seem premature at this juncture to suggest that a serious and violent group of offenders who can be grouped prior to early adolescence is reliably identifiable. There is evidence, however, that violent and serious offending chronicity may in the future be reasonably determined as a probable trajectory from age of onset, severity of childhood behaviour problems, temperament, antisocial attitudes, and antisocial peer opportunities. Remarkably, these factors remain consistent with the “big four” as earlier espoused by Andrews and Bonta (1998).

Actuarial Assessments of Risk

Multiple Problem Youth. There is a clear relationship between combinations of problems and delinquent status. Serious offenders have been found to be vastly underrepresented in groups of youths with no problems (Huizinga & Jacob-Chien, 1998). In general, as the number of problem areas increase, the proportion of the group that is delinquent steadily increases. In

addition, as the number of problems increases so does the probability of being a serious offender. A very large percentage of delinquents have more than one observable problem. Of particular note is that most serious offenders can be characterized as having multiple problems. On the other hand, there are clearly those with multiple problems that are not serious delinquents. In fact, those with multiple problems could not reliably be characterized as delinquents (Huizinga & Jacob-Chien, 1998).

Farrington (1997) created a vulnerability score that was based on five risk factors identified at the age of 8: low family income, large family size, low nonverbal IQ, parental discipline, and parental conflict. It was shown that the probability of a conviction for violence up to the age of 40 drastically increases the higher the number of risk factors. The SSDP has shown that the more risk factors early offenders maintained into their adolescence, the greater their likelihood of chronic offending. Similarly, the more problems that nonoffenders exhibited at 15 the greater the chances of late onset offending. Most notably, protective factors buffered this exposure to risk such that, regardless of the number of risk factors (or trajectory), the addition of a protective factor was shown to decrease the likelihood of violent offending (Hill et al., 1999). It was remarked, however, that youths with the most risk factors had the fewest protective factors.

Actuarial measures of criminal risk have been in use for years. Actuarial, or statistical prediction rules, are based on empirically derived mathematical relationships between the criterion measure and various independent measures. Given multiple problems of many criminal offenders and the accuracy of individual variables, many researchers have attempted to devise strategies for combining and weighting these variables to increase predictive precision. As mentioned above, this trend is being recognized in the developmental literature as researchers

find that the accumulation of risk factors (Farrington, 2000; Hill et al., 1999) or lack of promotive factors (Carr & Vandiver, 2001; Stouthamer-Loeber, Loeber, Wei, Farrington, & Wikstrom, 2002) place individuals at greater risk for continued criminal behaviours.

Many actuarial measures have been developed to predict future criminal activity in adult populations. With the exception of the Level of Service Inventory-Revised (Andrews and Bonta, 1995), most criminal actuarial instruments have focused almost exclusively on static predictors of risk (see Champion, 1994). Static factors of risk are measures of personal background such as age, offence history, or previous behaviour problems. Although accurate, these types of predictors are generally not subject to change (Bonta, 1996). Utilizing only static measures of risk leaves correctional agencies interested in planning interventions with no information about what factors can be altered and, what factors can be altered in a reasonable amount of time to influence the future likelihood of criminal behaviour.

Instruments have been developed that utilize dynamic predictors of risk. Dynamic risk predictors, as opposed to static predictors of risk, are factors that upon change alter the future probability of recidivism. Dynamic predictors are commonly referred to as criminogenic need factors. As such, actuarial instruments that measure these factors are typically referred to as "risk/needs" assessment instruments. Most research on dynamic risk instruments have only examined the predictive nature of risk/needs instruments and have failed to examine the dynamic nature of these tools and how changes in scores may reflect changes in risk. This is because dynamic predictors, as opposed to simple predictors, are derived through multi-wave longitudinal studies.

To establish dynamic predictors of criminal activity, changes observed between the initial assessment and reassessment must be examined in relationship to criminal conduct at some later

point in time. The importance of identifying dynamic factors for prediction has been well documented (Andrews & Bonta, 1998; Bonta, 1996; Gendreau et al., 1996; Motiuk, 1991; Zamble & Quinsey, 1991; 1997). Dynamic risk predictors determined through multi-wave assessments offer a higher level of empirical understanding into criminal conduct. They not only offer the potential to forecast future criminal activity but add to our understanding of how to influence the probability of future criminal conduct through specific interventions.

It has only been relatively recently that an emphasis on these dynamic factors has been apparent in the literature. Gendreau and his colleagues (1996) were able to demonstrate that dynamic predictors of risk performed at least as well as their static counterparts for general delinquency and several authors have also pointed out the potential malleable nature of risk factors for serious and violent offending in juveniles (Hawkins et al., 1998). Nonetheless, there has been limited use of dynamic risk predictors in the literature. Further, there has been limited use of actuarial risk/needs instruments utilized on young offender samples.

The Youth Level of Service/Case Management Inventory. The Level of Service Inventory-Revised (LSI-R) is an actuarial risk/need assessment instrument that has been widely validated on adult populations. Numerous studies have validated the LSI-R's use as a classification instrument within correctional institutions (Bonta & Motiuk, 1992; Motiuk, 1991), community correctional facilities (Bonta & Motiuk, 1985; 1987; 1990), and with provincial probation and parole samples in the community (Andrews, 1982). It has demonstrated predictive validity with a provincial female sample (Coulson, Ilacqua, Nutbrown, Giulekas, & Cudjoe, 1996) as well as concurrent validity in a male federal sample (Loza & Simourd, 1994). The meta-analysis by Gendreau et al. (1996) reported that the LSI-R produced higher correlations with recidivism than antisocial personality scales and other actuarial risk

instruments. As such, it is considered the instrument of choice for predicting criminal recidivism.

As with adults, standardized assessments are of paramount importance in the processing of young offenders (Hoge & Andrews, 1996a). There have been several efforts to adapt earlier versions of the LSI to youthful offenders. The first attempt was dubbed the Youth Level of Service Inventory (YLSI; Andrews, Robinson, & Hoge, 1984). Evidence in support of the reliability, construct validity, and criterion-related validity of this and similar instruments have been provided in numerous studies (Andrews, Kiessling, Mickus, & Robinson, 1986; Hoge & Andrews, 1996b; Shields, 1991; Shields & Simourd, 1991, Simourd, Hoge, Andrews, & Leschied, 1991).

The Youth Level of Service/Case Management Inventory (YLS/CMI; Hoge and Andrews, 1999) is an interview-based actuarial risk/needs instrument designed to aid in the assessment of young offenders. It surveys a variety of risk and need factors that may be exhibited by the youth and provides a means to employ knowledge of the dynamic risk factors in the development of a correctional intervention plan.

The current version of the YLS/CMI incorporates 42 risk/need items that research has indicated are highly related to criminal activity. Scores on the YLS/CMI are designed to reflect the risk for continued criminal activity. In addition, many of the items are identified as criminogenic need factors, or factors that upon change alter the probability of recidivism. In total, eight different Need Factors categories are identified. The YLS/CMI is a standardized instrument for use by professionals to assess the risk and needs of young offenders.

Normative data on the YLS/CMI are available from two samples (Hoge & Andrews, 1996b; Jung & Rawanda, 1999). Preliminary efforts have shown that the YLS/CMI is a reliable

(Hoge & Andrews, 1999) and valid predictor of recidivism (Jung & Rawana, 1999) in young offender samples. The Hoge and Andrews study (1999) indicated that all need factors were successfully able to discriminate between dispositional categories. In particular, secure custody juveniles had higher scores on all need factors than open custody or probation groupings. In the Jung and Rawana (1999) study they examined the ability of the YLS/CMI to discriminate between recidivists and nonrecidivists. The total risk score and the risk/need subscores all significantly discriminated between the groups. Regardless, there is presently a lack of substantial research on the instrument and, in particular, research validating its use as a dynamic risk instrument.

Hypotheses

The current study can be divided into four major components, each with its own set of hypotheses. The first of these components primarily addressed the psychometric properties of instruments designed to measure ADHD, CD, ODD, psychopathy, and risk in adolescent samples. The second component aimed to determine the capabilities of the measures to differentiate offender populations and add to our understanding of criminal persistence as well as predict various criminal outcomes. The third attempted to validate a risk/needs instrument as a functionally valid tool with adolescent offenders. Thus, the exploration of the utility of dynamic risk factors in predicting future criminal offending was undertaken and the ability of multi-wave assessments to enhance predictive capacity was ascertained. The final component was a detailed analysis of the trajectories of offending over a 10-year period and an examination of both the risk and protective factors for both adolescent and adult criminal offending. The overall objective of the research project was to provide empirical support for enhanced assessment strategies for

young offenders that will ultimately lead to improved risk determination, more effective intervention and treatment strategies, and more efficient use of correctional resources.

The first consideration of this study was to systematically examine the ability of several fundamentally diverse instruments and risk factors to predict recidivism in a young offender sample. It was necessary to determine the reliability and validity of measurements of disruptive behaviour disorder for a young offender sample. These included measures of ADHD, ODD, and CD. It was hypothesized that all measures would show adequate psychometric properties and could be utilized as either categorical or dimensional estimates of their respective disorders for the current sample.

The study examined a number of individual risk factors that have been well established in the literature as being related to serious and violent offending patterns in late adolescence and early adulthood. This examination included symptoms, criteria, and traits of childhood/adolescent disruptive behaviour disorders and psychopathy. It was expected that risk factors representing the frequency, seriousness, and versatility of past criminal offending, poor academic performance, poor school conduct, substance use, family functioning, antisocial peers, personality traits/temperament, and antisocial attitudes would all be significantly correlated with recidivism measures. Risk and need factors were hypothesized to be inter-related to varying degrees, with peers, antisocial attitudes, and personality/temperament being most predictive of criminal outcomes. Thus, the group of variables comprising the “Big Four” were expected to be significantly predictive of all recidivism measures and typically add incrementally to the prediction of criminal offending after other variables had been accounted for.

The present study aimed to assess the validity of disruptive behaviour disorder symptomology to predict future criminal offending. It was expected that both categorical and

dimensional measures of ADHD, CD, and ODD would be predictive of serious and violent offending in both adolescent and adult offending. Age of onset and severity of these problems were thought to be critical aspects of the disorders and most likely to contribute most to the explanation of future offending. It was further hypothesized that youths scoring high on both the hyperactivity/impulsivity subcomponent of ADHD and CD would be more at risk for future offending than either ADHD only or CD only youth. Therefore, those individuals identified as ADHD with comorbid CD symptomology were predicted to be the most at risk for future serious and violent conduct relative to comparison groups.

Psychopathy in children and adolescence is emerging as an important construct in the evaluation of career criminal offending. To date, there is little empirical data available that validates an assessment instrument on a Phase I young offender sample followed through adulthood. The current study attempted to measure the construct of psychopathy retrospectively. It was expected that the PCL:YV would be a reliable and valid tool in the assessment of juvenile delinquents and be predictive of both future juvenile and adult offending.

A secondary purpose of examining psychopathy was to determine the relationship it holds with childhood and adolescent disruptive disorders. If psychopathy is to be a viable construct it must be distinguishable from other behavioural disorders in either the severity or nature of past or future antisocial behaviours as well as the personality/temperament of youths. It was expected that PCL:YV total and Factor II scores would be highly correlated with CD and ODD. However, PCL:YV Factor I scores (interpersonal/affective component) were hypothesized to be only moderately correlated with other disruptive disorders. If psychopathy and conduct disorder are not measuring the same underlying construct, Factor I scores should be incrementally predictive of future offending. It was hypothesized that Factor I scores on the

PCL:YV would be related to several future outcome measures and would account for unique variance in the explanation of antisocial behaviour after both Factor II and CD are controlled.

The literature review has suggested that ADHD with CD may be a subtype of CD that most resembles psychopathy (Lynam, 1998). However, recent ADHD reviews suggest that it is the hyperactivity/impulsivity component of ADHD that places youths at risk for negative psychosocial outcomes. It was hypothesized that the PCL:YV score would distinguish between the ADHD comorbid CD group from other disruptive disorder groups on measures of past delinquency and risk for future offending. Given the speculated relationship between psychopathy and this subtype, it was hypothesized that the PCL:YV would not offer any incremental predictive validity once hyperactivity and conduct disorder criteria have both been controlled but would when CD without hyperactivity was controlled.

It is important to establish that a combination of individual risk factors are capable of more accurately assessing risk for future criminal conduct. It was anticipated that combinations of variables would increase the accuracy of prediction. The current study attempted to evaluate the ability of the YLS/CMI to predict recidivism over both the short and long term. In particular, the YLS/CMI was surmised to be a valid predictor of not only general recidivism but of serious and violent reoffending in juvenile and adult follow-up periods.

In the current study it was possible to determine whether changes in dynamic risk factors were truly representative of changes in future risk for criminal activities. Changes in risk level assessed through multi-wave assessments were explored for their relationship to future criminal behaviour. It was hypothesized that dynamic variables would be predictive of future criminal activity and that changes in these need factors would be reflected in actual changes in the probability of future criminal conduct. In particular, increases in the total risk measure over time

would correspond to increases in the probabilities for future criminal conduct and vice versa. It was further predicted that second wave assessments of dynamic factors would be incrementally predictive of outcome measures. That is, follow-up assessments using the YLS/CMI total score would be more highly related to outcome measures and add significantly to the prediction of future offending over the initial assessment. Correspondingly, it was expected that any changes in each need factor score (i.e., academic performance, peers, family functioning, substance abuse, leisure, and attitude) would be reflected in different probabilities for recidivism.

This study examined the relative contributions of the risk/need approach in the assessment of youthful offenders versus various psycho-diagnostic systems. The YLS/CMI assessed a broader range of potential risk factors than any single factor or disorder. As such, it would be surprising if it did not exceed the predictive capabilities of all other measures. Further, the YLS/CMI has the built in ability to change as circumstances and conditions require. Assessments of disruptive disorders and psychopathy, although potentially dynamic, are typically based on the functioning of the individual over extended time periods and, as such, are not readily changeable. If psychopathy and disruptive disorders form the basis of the persistent criminal offender, these offenders must be characterized by enduring personality traits that are unlikely to change substantially over the short or long-term. As the YLS/CMI is a broad-based assessment instrument that includes many empirically validated factors not taken into account by other measures, it was hypothesized that this instrument would establish itself as incrementally valid over other combined measures or psycho-diagnostic classification instruments.

The final undertaking of the current research was to identify different offending trajectories for past and future offending. Once identified it was necessary to determine whether adolescent factors were capable of predicting the future course of these trajectories. The

literature consistently implicated the age of onset and combinations of behavioural disorders as being the starting point of a trajectory of persistent criminal offending. The combination of early and severe maladjustment followed by conduct problems in adolescence was hypothesized to be characteristic of late adolescent and adult criminality, and specifically violent crime at both age periods. It was expected that chronic offenders, once identified, would be distinguishable from desisters based on behavioural history, personality/temperament, peer relations, and attitudes. It was also conjectured that different trajectories would exhibit different adolescent risk factors.

Consistent with previous research, risk and protective factors were drawn from each risk/need category. Examination of the relationship between protective/risk factors and future trajectories was undertaken. The purpose was to examine the probability of future offending when individuals were already considered at risk. Thus, the ability of protective factors to interact with risk was explored. It was hypothesized that variables reflecting prosocial ties and attachment to prosocial associates during adolescence would interact with risk level to effectively decrease the chances of offending at the highest level of risk.

Method

Participants

Participants for the study were selected from the entire population of 507 youthful offenders who had been referred to the Ottawa Community Support Team (CST) since its inception in 1988. The CST clientele consists of 12 to 16 year old male and female young offenders who live in Ottawa or the surrounding area. They are young offenders with custody, detention or probation orders, as well as those with a high likelihood of receiving such orders. Clientele includes Phase I young offenders who are assessed by the Ministry of Community and Social Services as demonstrating high-risk tendencies while on probation or are at risk as indicated by their charges under the Young Offenders Act. Young offenders with severe emotional disturbances, physical handicaps, and developmental problems are typically excluded from consideration. Participants were considered for inclusion into the present study if they were referred to the CST, regardless of whether or not they participated in the program.

The final sample size for the current research was 408 young offenders. The original sample in the present research consisted of the entire group of 507 young offenders who had been referred to the Ottawa Community Support Team (CST) by April of 1996. Of the 507 original referrals approximately 76 were rejected from inclusion into the final analysis due to no collateral sources of information being present on file (i.e., no pre-sentence reports, psychological/psychiatric assessments, and/or documented contacts with a parent/guardian). Another 21 were not included due to insufficient background details being available to reliably complete the rating instruments. Notably, no statistical differences in recidivism rates were found between rejected and accepted cases. Finally, 2 cases were rejected due to a lack of follow-up recidivism data being available from any source.

Participation Rates. Ninety-one percent of the sample ($n = 370$) were accepted into the program, although only 87% actually took part in the CST assessment process. Of the youths being referred, 52% were in agreement with the referral while 34% were considered hesitant to participate and 3% resistive. Of the parent/guardians interviewed for the referral, 76% expressed a positive or indifferent reaction to the referral. Only 1% ($n = 4$) was considered resistive at referral. The most common rationale given for CST referrals were family counselling (56%), anger management (45%), substance abuse (24%), and supportive counselling (24%). The average length of time in the program was 196 days ($SD = 205$) with a range of 0 days to 1188 days. The mean age at termination was 16 ($SD = .98$) with a range from 12 years of age to 20.

Data Collection Site

All subjects were originally referrals to the Ottawa Community Support Team. This agency was created in response to an initiative of the Ministry of Community and Social Services to expand services for young offenders in Ontario. The Ottawa Community Support Team was designed to provide specialized services to high risk young offenders so that the potential for secure custody placement is decreased or not repeated. The program goals of the Ottawa Community Support Team are as follows:

- (1) To assist high-risk young offenders to acquire the skills required to avoid further involvement in the offender system
- (2) To facilitate a return to the community from secure services as early as possible; and
- (3) To support the individual during the reintegration phase

Data Collection

Upon referral, the CST typically conducts a thorough risk/needs evaluation. Data is collected by CST caseworkers through interviews as well as through independent collateral sources (e.g., other agencies/youth services, hospitals, parents/guardians, and teachers). After

both risk and need level have been determined, a suitable intervention strategy is developed and then implemented, when possible, by the CST. Progress summaries and in-depth monthly reports are typically submitted throughout a client's participation in the program. At program termination, post-testing assessments are conducted. All information is placed on a client's case file.

Comprehensive file reviews were completed on the 408 Phase I Young offenders who had been referred by the CST. In addition to CST documentation (including referral information, assessment, psychometric testing, progress reports, case-notes, and termination assessment) the case files regularly included psychological/psychiatric reports on the youth, educational assessments, pre-disposition reports, social history reports, treatment progress, educational reports, and case summaries. For the current sample of 408, the most common collateral source of information was the Pre-disposition Report ($M = 1.08$; $SD = .93$), followed by psychological/psychiatric reports ($M = .33$; $SD = .70$) and residential documents ($M = .31$; $SD = 1.03$). In total, the average file for each client included in the study contained 1.95 reports ($SD = 2.07$) from collateral sources.

A detailed coding manual was constructed to objectively define and code the social background, community functioning, criminal history, and diagnostic criteria available on file or part of the CST database (see Appendix A). Risk and protective factors are also defined and identified in the coding manual. One graduate psychology student coded all variables and assessment instruments based on a review of the file documentation. One additional graduate student completed a subsample of file reviews for reliability purposes.

Recidivism data was available on the entire CST population. Recidivism data was collected from three sources. Recidivism data pertaining to in-program offending was available

through monthly updates and termination reports submitted by individual caseworkers. Post-program recidivism data consists of official records of both future juvenile court infractions and adult criminal convictions from separate sources. The original recidivism data was gathered through the provincial offender records system in early 1996. A CPIC search was later conducted on the entire sample several years following termination from the program. Any discrepancies between records were counted in the direction of an offence or disposition being present. Definitions of key outcome variables can be found in Appendix A.

Instruments

All measurement instruments were completed according to the proper coding procedures outlined in their respective manuals except where specifically indicated.

Youth Level of Service/Case Management Inventory. The YLS/CMI was adapted from the original Level of Supervision Inventory (Andrews, 1982). The YLS/CMI (Appendix B) was designed to aid professional workers responsible for assessing youthful offenders. It is a checklist that enables professional workers to survey a broad array of risk and need factors exhibited by youth. It is based on a General Personality and Social Psychological model of criminal conduct (Andrews & Bonta, 1998) that purports that youthful criminal activity is complex and dependent on a number of interacting variables relating to an individual's environment, circumstances, and personal characteristics. The YLS/CMI is viewed as an integral part of the assessment of youthful offenders as expressed through the principles of case classification (see Andrews, Bonta, & Hoge, 1990 for a review).

Preliminary research using YLS/CMI prototypes on youthful offenders suggested that a number of variables were most strongly related to criminal activity. The YLS/CMI retained 42 items from an original 112 and added a number of features specifically addressing issues of

responsivity, professional override, and case management. The 42 items are divided into 8 categories: Criminal History; Family Circumstances/Parenting; Education/Employment; Peer Relations, Substance Use; Leisure/Recreation; Personality/Behaviour; Attitudes/Orientation. Individual items are defined by the scoring key. These items are totaled for an overall assessment of risk. Each Need Factor is the sum total of all individual items in its domain and is intended to provide a level of risk within each specific need domain.

Another section of the YLS/CMI provides a record of information that may be related to other needs or special considerations but are not necessarily linked to criminal activity. These are typically referred to as responsivity factors. These were recorded in accordance to the coding manual.

The Psychopathy Checklist: Youth Version. The PCL:YV (Forth, Kosson, & Hare, in press) was developed to facilitate the scoring of psychopathy with adolescent offenders. Its items, contents, and scoring are based on the PCL-R model (Hare, 1991). Modifications to individual item scoring on the PCL:YV were made to take into account the limited life experiences of youth as well as place more emphasis on relationships with peers, family, and school adjustment.

The PCL:YV remains a 20-item scale that assesses 20 behavioural, interpersonal, and affective components of youth on a 3-point scale. Each item is scored 0 (does not apply to the individual), 1 (applies in some respects), or 2 (definitely applies to the individual). The instrument utilized the same factor scoring system of its predecessor with adult populations: a personality or interpersonal/effective component (Factor I) as well as a behavioural or social deviance component (Factor II). The coding sheet utilized in the current study is located in Appendix C. All missing/omitted items were pro-rated. For the PCL:YV, just over one-quarter

($n = 107$) of the cases had at least one missing item. Items reflecting grandiosity ($n = 16$), shallow affect ($n = 13$), and interpersonal relations ($n = 13$) were omitted most frequently.

Forth and Burke (1998) reviewed the internal consistency, item homogeneity, and inter-rater reliability of the PCL:YV. It was reported through seven studies involving three distinct samples that the PCL:YV demonstrated adequate internal consistency, was a homogeneous scale, and displayed high inter-rater reliability. Notably, inter-rater reliability coefficients ranged from .91 to .98.

Childhood and Adolescent Taxon Scale. The Childhood and Adolescent Taxon Scale (CAT; Quinsey, Harris, Rice, & Cormier, 1998) is based on a theoretical position that psychopathy is underlain by a categorical variable and that childhood and adolescent history is best able to predict class membership. The eight items constituting the scale are scored between 0 and 2 (see appendix D). Higher scores represent a higher degree of likelihood of being a psychopathy group member. Research reported by Quinsey and his colleagues (1998) have suggested that this measure can be used interchangeably with other psychopathy measures and is predictive of violent recidivism ($r = .34$). Skilling et al. (2001) have conducted a study with children and suggested that the CAT is the best measure to determine psychopathy group membership.

ADHD Rating Scale-IV. The ADHD Rating Scale-IV (DuPaul, Power, Anastopoulos, & Reid, 1998) is a behavioural questionnaire based on the diagnostic criteria for ADHD (see DSM-IV; APA, 1994). It consists of 18 items presented on a 4-point Likert scale (“never or rarely”, “sometimes”, “often”, or “very often”) that are made to closely reflect DSM-IV diagnostic features. The scale in its typical usage requires that a parent or teacher make a determination of

the symptomatic frequency that characterizes the child's performance over the past 6 months or during the school year.

Results of both exploratory and confirmatory factor analyses of the ADHD Rating Scale-IV (ADHD-RS) indicate that a two-factor solution would best represent the scale. The scale consists of two subscales: Inattention (9 items) and Hyperactive-Impulsivity (9 items) that are both computed by summing their respective items. Inattention symptoms comprise the odd-numbered items while Hyperactive-Impulsive symptoms are reflected in even numbered items. The total score is obtained by adding the two subscale raw scores. Raw scores can be converted to percentile scores by using the appropriate scoring profile that is based on both gender and age.

The researchers that constructed the scale found ratings on the symptoms vary significantly as a function of age and sex. Boys are consistently reported to exhibit more frequent symptoms on both inattention and hyperactive-impulsivity factors while younger children are likely to receive higher scores on the scale. Normative data reflect these differences.

Coefficient alphas have ranged from .92 to .94 for the total score on test construction samples. The Inattention subscale has coefficient alphas ranging from .86 to .96 and has been found to be .88 across studies for the Hyperactive-Impulsivity subscale. Test re-test reliability has been calculated by pearson correlation coefficients to be approximately .85. Inter-rater agreement between parents and teachers has been moderate (.40s). Thus, subscales on both versions have been shown to have high levels of internal consistency and test re-test reliability. Further, subscales scores have shown criterion validity and an ability to discriminate between cases of clinically diagnosed and non-diagnosed youths. Optimal cut-off scores are provided to diagnose for ADHD and determining subtypes. These have been determined to be at the 93rd percentile. School version cut-offs were utilized by the current study.

The Disruptive Behaviour Disorder Rating Scales. The Disruptive Behaviour Disorder Rating Scales (Barkley & Murphy, 1998) are behavioural questionnaires based on the diagnostic criteria for both ODD and CD (see DSM-IV; APA, 1994). The Oppositional Defiant Disorder rating scale (ODD-RS) consists of 8 items presented on a 4-point Likert scale ("never or rarely", "sometimes", "often", or "very often") that are made to closely reflect DSM-IV diagnostic features. Similarly the Conduct Disorder symptom scale (CD-sym) is a 15 item scales presented on a 4-point Likert scale ("never or rarely", "sometimes", "often", or very often"). Scoring for the ODD-RS and CD scale can be cumulative or cumulated based on the number of answers circled as a positive endorsement symptom of the disorder. In this study the ODD-RS was used as a cumulative measure while the CD-sym was utilized as cumulating only those with a positive endorsement. No normative data is available on these scales.

Results

Demographics

The entire sample used in the current analyses consisted of 408 young offenders. A summary of demographic variables can be found in Table 1. Eighty-percent ($n = 327$) were male and the remaining 20% ($n = 81$) were female. They ranged in age at referral from 12 to 19 years ($M = 15.3$, $SD = .92$). In total, 7 subjects were 12 years of age at referral (2%) while another 29 were 13 years old (7%). More than one-quarter were 14 years of age ($n = 111$) while approximately 40% were 15 years old ($n = 172$). Another 21% ($n = 84$) were 16 years of age while 4 were 17 (1%) and 1 was 19 (.2%).

At referral, the majority of participants ($n = 239$) were registered as functioning at the grade 9 level (59%). Another 17% ($n = 69$) were registered at the grade 10 level and 3% ($n = 14$) at grade 11. Only one participant was attending grade 12. Eighty-five participants (22%)

Table 1

Descriptive Statistics of Demographic and Prior Offending Variables

	<i>M</i>	<i>SD</i>	Range
<u>Demographic (continuous)</u>			
Age at intake	15.44	.93	12 - 19
Age at re-test	16.08	.96	13 - 20
Grade	8.98	.85	5 - 12
Age at separation - parent	8.28	5.91	0 - 16
<u>Demographic (dichotomous)</u>			
Social Assistance	.32	.47	0 - 1
Parental criminal history	.47	.50	0 - 1
Parental substance abuse	.52	.50	0 - 1
Regular school stream	.38	.49	0 - 1
Special support unit	.28	.45	0 - 1
Failed elementary grade	.48	.50	0 - 1
<u>Offending</u>			
Total convictions	7.31	5.81	0 - 37
Total violent convictions	1.28	1.69	0 - 12
Incarcerations	1.20	1.17	0 - 6
Number of types of offences	5.43	2.57	1 - 13
<u>Program</u>			
Time in program (intake - retest)	196.6	204.68	1 - 1188
Custody time added (months)	1.43	2.96	0 - 19

had not yet entered high school. Of these, 16% ($n = 67$) were in grade 8, 4% ($n = 15$) were in grade 7, and less than 1% were in either grades 6 ($n = 2$) or grade 5 ($n = 1$). Of the entire sample, 155 (38%) were considered in a regular stream classroom while 112 (28%) had at one time in their lives been placed in a special support unit. Twenty-one percent of the youths were placed in either remedial classrooms ($n = 34$), vocational classrooms ($n = 8$) or special classrooms for learning disabled students ($n = 8$). An additional 42 youths that were identified as being in a normal stream were currently placed in an alternative or directed classroom environment. Another 49 (12%) were not enrolled in school and had not been attending school for more than one consecutive term.

When referred the majority of participants were living at home and on probation ($n = 205$). Approximately 20% ($n = 82$) were living in an open custody residence, 16% ($n = 67$) were in a secure custody residence or detention, and just over 10% ($n = 42$) had been ordered to live outside the home. The remaining 12 youths were living independently. A family income measure indicated that 30% ($n = 122$) were non-working poor, 36% ($n = 148$) were working poor, 31% ($n = 125$) were considered middle class, and 3% ($n = 13$) upper class. Almost two-thirds ($n = 269$) of participant's parents were separated or divorced. One or both natural parents were deceased in 5% ($n = 20$) of the cases. In almost 30% ($n = 119$) of the families the parents lived together. The mean age of separation from a parental figure was 8.3 years of age ($SD = 5.9$).

Criminal Background

Criminal History. Approximately 99.5% of the selected sample had a criminal conviction on their record at the time of the referral. The index offence relating to their referral was of a violent nature in 43% of the cases ($n = 177$). Prior to the index offence more than half of the

sample ($n = 229$) had a previous criminal conviction. The number of criminal offences on record for the sample at referral to the CST ranged from 0 to 37 ($M = 5.7$, $SD = 4.7$). Over 40% ($n = 172$) of the sample had never previously been incarcerated, while 35% had been incarcerated once ($n = 142$) and over 7% ($n = 29$) had been incarcerated on three or more prior occasions. Age at first arrest ranged from the ages of 6 to 16 ($M = 13.6$, $SD = 1.3$).

The disposition relating to the index offence was probation in 43% ($n = 175$) of the cases. Only 1% had an alternative or suspended sentence. Of the 56% ($n = 229$) serving custody disposition, 46%, 29%, and 24%, were serving an open custody sentence, secure custody sentence or secure custody followed by open custody sentence, respectively. Of those serving an open custody sentence the mean time sentenced was 4.7 months ($SD = 2.97$) and ranged from 1 to 17 months. In addition, of those serving time in a secure facility, the mean disposition was 3.1 months ($SD = 3.3$) with a range from 1 month to 24 months.

The nature of criminal convictions on participants' records varied. Two participants had been convicted of a homicide and 13% of the sample ($n = 54$) had a serious assault on record. The most common offence was theft (66%). This was followed by failure to comply with probation/bail (43%), common assault (38%), mischief (25%) and escape (16%). Less than five percent of the sample had convictions for sexual offences, robbery, drugs, arson or fraud.

In-program Offending. While involved in the program, roughly 52% of the participants reoffended who had an opportunity to do so. The mean number of offences while in program was 2.2 ($SD = 3.5$) with a range from 0 to 22. Almost a quarter ($n = 48$) of the youths with an opportunity had an in-program conviction for a violent crime. The most common in-program offence was for failing to comply with probation (24%) followed by theft (23%), break-ins (13%), and common assault (8%). Time to reoffend while in the program ranged from 1 day to

622 days and averaged 157 days ($SD = 108$). Of the entire sample over 20% received an additional secure custody sentence while involved in the program. Probation was the disposition in 6% of the cases while open custody was utilized in 8%. The custody time added ranged from 1 month or less to 19 months ($M = 1.6$, $SD = 4.5$). As a result of further offending after referral the mean number of convictions at termination from the program was 7.3 ($SD = 5.8$) with a range from 0 to 37.

ADHD and Disruptive Behaviour Disorder Scales

The ADHD Rating Scale-IV. The psychometric properties of the ADHD Rating Scale-IV (ADHD-RS) were first examined to assess the adequacy of using file-based reviews to complete this measure. Coefficient alphas were calculated to determine the internal consistency of the ADHD-RS and its subscales of Inattention and Hyperactivity-Impulsivity. The following alpha coefficients were obtained: Total score = .93, Inattention, .88, and Hyperactivity-Impulsivity = .89. Intra-observer ratings (modified) were obtained on a sample of 25 participants. Pearson product-moment correlation coefficients were as follows: Total score = .93, Inattention = .85, and Hyperactivity-Impulsivity = .92. Descriptive statistics of the ADHD-RS across gender and age groups are shown in Table 2. T-tests were performed in order to determine whether there were gender differences in ADHD-RS scores and its subcomponents. It was determined that males had significantly higher ADHD-RS total scores ($t(406) = 5.76$, $p < .001$), Inattention subscale scores ($t(406) = 5.96$, $p < .001$) and Hyperactive-Impulsivity subscale scores ($t(406) = 4.71$, $p < .001$). Due to the low number for the younger age groups, differences in scoring were not assessed.

When ADHDS-RS scores were compared across different levels of a social economic status measure significant group differences were found ($F(3, 404) = 3.02$, $p < .05$). However,

Table 2

Means and Standard Deviations of the ADHD Rating Scale-IV

Age (years)	<i>n</i>	<u>Inattention</u>		<u>Hyperactivity- Impulsivity</u>		<u>Total Score</u>	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Male							
12-13	9	12.44	6.11	9.56	6.39	22.00	11.99
15-18	318	9.08	6.59	6.22	6.59	15.21	12.11
subtotal	327	9.12	6.61	6.28	6.42	15.40	12.14
Female							
12-13	3	4.00	4.58	0	0	4.00	4.58
15-18	78	4.44	5.23	2.78	4.97	7.22	9.27
subtotal	81	4.42	5.18	2.68	4.90	7.10	9.14
Totals	408	8.19	6.62	5.56	6.31	13.75	12.06

this relationship was not linear, as the highest and lowest income groups were found to have the highest scores on the ADHD-RS total score. No statistically significant differences across social economic status were found for the ADHD-RS subscales. As a result, the ADHD-RS did not show significant increases as SES declined.

Correlations between ADHD-RS and a variety of observer ratings of personality dimensions were conducted. The strongest significant correlations were found between ADHD-RS total score and observer ratings of attention span ($r = .71, p < .001$), absence of future plans ($r = .34, p < .001$), disruptive classroom behaviour ($r = .35, p < .001$), social adjustment problems ($r = .28, p < .001$), and impulsivity ($r = .25, p < .001$). No significant correlations were found between ADHD-RS and its subcomponents and observer ratings of empathy while shy/withdrawn showed negative significant correlations with the ADHD-RS ($r = -.12, p < .05$) and its subscales of Hyperactivity-Impulsivity ($r = -.11, p < .05$) and Inattention ($r = -.12, p < .01$). Thus, the ADHD-RS showed significant correlations with criterion measures of similar constructs.

When examining ADHD-RS scores and their relationships with measures of cognitive functioning it was found that the ADHD-RS, as well as the Inattention and Hyperactivity-Impulsivity subscales, were able to differentiate between all cognitive measures. In particular, the ADHD-RS score was significantly higher for those identified as having a learning disability ($t(406) = 5.42, p < .001$), being low functioning ($t(406) = 3.61, p < .001$), having past psychiatric interventions ($t(406) = 5.27, p < .001$), and failing an early grade ($t(406) = 4.40, p < .001$) than comparisons groups. Similarly, the ADHD-RS subscales were found to have significantly higher scores on measures indicative of cognitive functioning problems. In all cases these differences were most pronounced in the Inattention subscale. Particular note is

made of the significantly higher scores on the Inattention subcomponent if the youth is identified as having a learning disability ($t(406) = 6.49, p < .001$) and a greater suspicious of cognitive delays ($t(405) = 2.29, p < .05$). These differences were consistently more pronounced with the Inattention subscale than the Hyperactivity-Impulsivity subscale. Thus, the ADHD-RS was capable of differentiating offenders based on dichotomous variables of cognitive impairment and these differences were predominantly due to, but not only due to, the Inattention subscale.

Validity coefficients were examined between ADHD-RS scores and historical diagnosis of childhood disorders. Results of these t-tests found that higher scores on the ADHD-RS were associated with a past diagnosis of ADHD-Inattentive type ($t(406) = 9.67, p < .001$) as well as ADHD-Hyperactive-Impulsivity type ($t(406) = 11.90, p < .001$). Thus, ADHD-RS total scores were able to discriminate between those who were likely to have been clinically referred and received a diagnosis of ADHD in the past. Significantly higher scores on the ADHD-RS ($t(406) = 6.86, p < .001$) and its subscales of Inattention ($t(406) = 6.11, p < .001$) and Hyperactivity-Impulsivity ($t(406) = 6.61, p < .001$) were also associated with a significantly higher probability of a past diagnosis of conduct disorder, but not a diagnosis of a substance abuse disorder. Developmental delays could be differentiated based on the ADHD-RS Inattention subscale ($t(406) = 4.02, p < .001$) but to a lesser extent the ADHD-RS hyperactive-impulsiveness subscale ($t(406) = 2.65, p < .05$).

ADHD Rating Scale-IV Factor Analyses. The diagnostic criteria for ADHD have undergone major changes that have often been due to the varying conceptualizations of the dimensions underlying the disorder. A tripartite model is currently utilized wherein children or adolescents have to meet criteria on three separate dimensions of: inattention, hyperactivity, and impulsivity. Because the ADHD-RS is based on the DSM-IV conceptualization it was

investigated whether a factor analysis of these scales would conform to the dimensional structure of the diagnostic criteria list given the forensic sample. An exploration of the underlying structure was therefore attempted with the current sample of juvenile delinquents.

A traditional factor extraction approach using Principle Axis Factoring (PAF) with oblique rotation was implemented. This method was used because the factors were not hypothesized to be orthogonal or conceptually unrelated. Furthermore, in scales with high internal consistency it has been recommended that data should be obliquely rotated rather than the traditional use of varimax rotation. This is suggested by Dupaul et al. (1998) as a means to refute the tendency of other rotation procedures to mitigate against a general factor solution for the ADHD-RS. A solution that extracted and rotated all factors with eigenvalues greater than one was used.

The PAF analysis resulted in a four-factor solution that accounted for 59% of the variance. The first factor accounted for 43% and the second factor accounted for an additional 6% of the total variance. The third factor added 5% to the explained variance. A fourth factor explained another 4% of the variance. The rotated pattern matrix is presented in Table 3. Typically, items reflecting Inattention loaded on factor 1, impulsivity items loaded on factor 2, and hyperactivity on factor 3. It was notable that the two items measuring forgetfulness and losing necessary things did not load on the Inattention factor but, instead, splintered into their own factor. One item loaded on more than one factor. Several factor loadings are above the .70 marker suggesting that they are excellent measures of the factor. Only a select few were considered in the fair range. The variables were well defined by the factor solution as seen in communalities that ranged from .40 for poor organization to .77 for sustained attention. The correlations between factors suggest a close relationship.

Table 3

Rotated Pattern Matrix for the ADHD Rating Scale-IV

	<u>Loadings</u>			
	Factor 1	Factor 2	Factor 3	Factor 4
ADHD Rating Scale Items				
Fails to pay attention	<u>.62</u>			
Difficulty sustaining attention	<u>.87</u>			
Does not listen	<u>.76</u>			
Not follow through/Fail to finish work	<u>.82</u>			
Difficulty organizing tasks/activities	<u>.43</u>			
Avoids/dislikes activities requiring effort	<u>.65</u>			
Loses things necessary for tasks				<u>.60</u>
Easily distracted	<u>.50</u>			
Forgetful in daily activities				<u>.82</u>
Fidgets or squirms in seat			<u>.71</u>	
Leaves seat when seated is expected			<u>.65</u>	
Seems restless			<u>.86</u>	
Difficulty engaging in activities quietly		<u>.43</u>	<u>.40</u>	
Seems on the go or driven by a motor			<u>.51</u>	
Talks excessively		<u>.71</u>		
Blurts out answers before questions completed		<u>.83</u>		
Difficulty awaiting turn		<u>.52</u>		
Interrupts or intrudes		<u>.55</u>		
Factor Correlation Matrix				
Factor 1	1.00			
Factor 2	.525	1.00		
Factor 3	.582	.469	1.00	
Factor 4	.409	.465	.323	1.00

Note: Factor loading less than .40 have been suppressed

Another Principle Axis Factor analysis was completed but a forced two-factor solution was implemented. Items were free to load on either factor. The forced factor solution was considered a confirmatory tactic to replicate earlier findings utilizing the ADHD-RS scale. Table 4 shows the rotated pattern matrix for the two-factor solution. Typically, items reflecting Inattention were loaded on factor 1. These, however, also included three items from the hyperactivity criteria (i.e., DSM IV criteria). This pattern made interpretation of this factor more difficult. The second factor was comprised of impulsivity items as well as 3 hyperactivity and 2 inattention items.

It was evident from this second PAF analysis that the loadings and communalities tended to be lower. This suggests that the variables were not well represented in some of the factors and that several variables could not be accounted for by the factors. It is evident that the four-factor solution resulted in an increase in total variance explained and was more consistent with the tri-dimensional nature of ADHD detailed in the DSM-IV than of the two-factor model. A two-factor solution was not considered interpretable. Either a three factor (excluding forgetfulness) or uni-dimensional approach appears justified.

ADHD Rating Scale-IV Utilized as a Diagnostic Tool. The ADHD-RS can be used as a guide to determining diagnosis (Barkley & Murphy, 1998). Norms have been presented in the past and clinical cutoff scores have been proposed (i.e., 93rd percentile). Published thresholds were utilized as a basis for diagnosing ADHD along with the ADHD-Inattention only subtype (ADHD-IA), ADHD Hyperactive-Impulsivity only subtype (ADHD-HI) and ADHD combined subtype (ADHD-both). As a result, 54 (13%) of the participants met the clinical cutoff score for a diagnosis of ADHD. It was further found that 22 (5.4%) and 47 (11.5%) participants were above the 93rd percentile on the Inattention and Hyperactive-Impulsivity subscales of the ADHD-

Table 4

Rotated Pattern Matrix for the ADHD Rating Scale-IV Solution

ADHD Rating Scale Items	<u>Loadings</u>	
	Factor 1	Factor 2
Fails to pay attention	.58	
Difficulty sustaining attention	.91	
Does not listen	.79	
Not follow through/Fail to finish work	.79	
Difficulty organizing tasks/activities	.66	
Avoids/dislikes activities requiring effort	.74	
Loses things necessary for tasks		.42
Easily distracted	.73	
Forgetful in daily activities		.39
Fidgets or squirms in seat	.45	
Leaves seat when seated is expected	.54	
Seems restless	.61	
Difficulty engaging in activities quietly		.44
Seems on the go or driven by a motor	.56	
Talks excessively		.83
Blurts out answers before questions completed		.80
Difficulty awaiting turn		.54
Interrupts or intrudes		.62

Note: Factor loading less than .40 have been suppressed

RS, respectively. The participants meeting the diagnostic cut-off for each of these subscales were then merged into specific categories or subtypes of ADHD. In total, 7 (1.7%) were found to meet the criteria for ADHD Inattention only subtype, 32 (7.8%) for ADHD Hyperactivity-Impulsivity only subtype, and 15 (3.7%) for the ADHD-both subtype. Just over 13% of the total sample ($n = 54$) was categorized as meeting the diagnostic cutoff for a diagnosis of ADHD. The remaining 87% were considered to fall outside the acceptable range for a diagnosis for any of the ADHD types. Gender breakdowns are presented in Table 5. It should be stressed that diagnosis was based on relative scores for both gender and age, thus, there are no significant gender or age differences by design for diagnostic subtypes.

ADHD and Family Background. The ADHD subtypes were subjected to a series of one-way ANOVAs that examined whether family background factors differentiated between the different ADHD subtypes. The results are presented in Table 6. It can be seen that there were significant differences in the mean age at first separation from a parent ($F(3, 404) = 5.4, p < .001$) and the rate of marital conflict ($F(3, 404) = 3.3, p < .05$) in the home across various ADHD subtypes. Parenting or family circumstances were less likely to differentiate these types. As further exploration, two pre-planned contrasts were performed to assess differences in the groups without an ADHD diagnosis versus all groups with a diagnosis as well as the combined group contrasted with the three other groups.

Age at separation from parents was found to be significantly lower for all ADHD subtypes versus the no ADHD diagnosis, $t(404) = 3.6, p < .001$. The differences in marital conflict did not show this pattern. Instead, the second contrast revealed that the combined subtype was significantly different from the three other subtypes, $t(404) = 3.0, p < .01$. This suggests that marital conflict was more prevalent in the combined subtype than all other groups.

Table 5

ADHD Diagnostic Subtype Prevalence

Criterion	<u>ADHD Diagnostic Type</u>				Total Diagnosed
	None	IA	HI	Combined	
Females (81)	69 (85%)	0 (0%)	8 (10%)	4 (5%)	12 (15%)
Males (327)	285 (87%)	7 (2%)	24 (7%)	11 (3%)	42 (13%)
Totals	354 (87%)	7 (2%)	32 (8%)	15 (4%)	54 (13%)

Table 6

Summary of One-way Analysis of Variance Examining Family Factors Across ADHD Subtypes

	ADHD Diagnostic Types					
Criterion	None <i>n</i> = 354	IA <i>n</i> = 7	HI <i>n</i> = 32	Combined <i>n</i> = 15	F	<i>p</i>
<u>Family cohesion</u>						
Age separated -parents	8.7 _a (5.9)	5.6 (5.5)	5.2 _a (5.4)	5.4 (3.8)	5.4	<.001
Marital conflict	.40 (.49)	.29 (.49)	.41 (.50)	.80 (.41)	3.3	.020
<u>Parenting style</u>						
Parental Control	.70 _a (.46)	.86 (.38)	.97 _a (.18)	.93 (.26)	4.9	.002
Poor parental supervision	.42 (.49)	.71 (.49)	.41 (.50)	.73 (.46)	2.8	.042
Inconsistent parenting	.51 (.50)	.71 (.49)	.56 (.50)	.67 (.49)	.85	n/s
Inappropriate discipline	.24 (.43)	.43 (.53)	.25 (.44)	.47 (.52)	1.7	n/s
Abusive father	.27 (.45)	.71 (.49)	.25 (.44)	.40 (.51)	2.6	n/s
Abusive mother	.12 (.33)	.00 (.00)	.06 (.25)	.27 (.46)	1.7	n/s
Physical abuse (any)	.36 _b (.48)	.57 (.53)	.50 (.51)	.73 _b (.46)	3.9	.010
<u>Family instability</u>						
Family criminal history	.45 (.50)	.71 (.49)	.63 (.49)	.53 (.52)	1.9	n/s
Family substance abuse	.51 (.50)	.71 (.49)	.50 (.51)	.67 (.49)	.82	n/s
Placed in group home	.48 _c (.50)	.71 (.49)	.72 _c (.46)	.87 _c (.35)	5.8	.001
Sibling placed	.11 _a (.30)	.14 (.38)	.31 _a (.47)	.33 (.49)	5.6	.001

Note: Values in parentheses are standard deviations.

_a Non-diagnosis differs from hyperactivity-impulsivity subtype at $p < .05$._b Non-diagnosis type differs from combined subtype at $p < .05$._c Non-diagnosis group differs from hyperactivity-impulsivity and combined subtypes at $p < .05$.

In most cases parenting style variables were less successful at differentiating across ADHD subtypes. Inappropriate use of discipline, inconsistent parenting, and abusive parents were all found to have non-significant relationships with ADHD subtypes. Thus, these parenting style variables were not found to be able to significantly differentiate between ADHD subtypes. However, loss of parental control ($t(404) = 2.9, p < .01$) and a lack of adequate supervision ($t(404) = 2.4, p < .05$) differentiated between the no diagnosis group and the three other groups. A post hoc comparison using the Bonferroni correction determined that the only significant mean difference across subtypes was between the no diagnosis subtype and the ADHD-HI subtype ($p = .005$). Thus, the hyperactive only subtype was considered more likely to be out of parental control than the no ADHD diagnosis subtype. Other subtype differences were not significant.

Placement in a group home was able to differentiate between the ADHD subtypes and the non-diagnosed group ($p < .001$) but did not statistically differentiate between the combined subtype and other subtypes. Therefore, those with an ADHD diagnosis were more likely to have been placed in a group home setting. Although the combined subtype had a higher rate of placement, this was not statistically significant from other subtypes. A similar pattern was found for sibling placements in group-homes.

ADHD and Social Functioning. To further examine the subtypes of ADHD across social functioning variables a number of one-way ANOVAs were completed investigating differences in school functioning including academic performance, school conduct, and social adjustment across ADHD subtypes. Significant differences in the presence of these factors were typically found across ADHD subtypes (see Table 7). Factors that were found to be significantly different across ADHD subtypes were further explored to determine the nature of these differences across relevant grouping. Again, pre-planned contrasts between the ADHD no diagnosis group and all

Table 7

Summary of One-way Analysis of Variance Examining School Functioning Variables Across ADHD Subtypes

	<u>ADHD Diagnostic Types</u>					
Criterion	None <i>n</i> = 354	IA <i>n</i> = 7	HI <i>n</i> = 32	Combined <i>n</i> = 15	<i>F</i>	<i>p</i>
<u>Academic</u>						
Failed elementary grade	.45 (.50)	.86 (.38)	.44 (.50)	.80 (.41)	3.8	.010
Learning disability	.15 (.36)	.43 (.53)	.22 (.42)	.40 (.51)	3.6	.014
Poor achievement	.65 (.48)	1.00 (.00)	.91 _a (.29)	.87 (.35)	5.2	.002
<u>Classroom conduct</u>						
Disruptive in classroom	.51 (.50)	.71 (.49)	.91 _a (.30)	.93 _a (.35)	10.0	<.001
Truant	.68 (.47)	.86 (.38)	.75 (.44)	.73 (.46)	.60	n/s
<u>Social</u>						
Poor relations school peers	.30 (.46)	.43 (.53)	.63 _a (.49)	.73 _a (.46)	8.5	<.001
No group activities	.70 (.46)	.43 (.53)	.97 _{ab} (.18)	.80 (.41)	4.8	.003
Poor social adjustment	.24 (.43)	.43 (.53)	.47 _a (.51)	.60 _a (.51)	5.7	.001

Note: Values in parentheses are standard deviations

_a represents group differences with the no ADHD diagnosis group at $p < .05$;

_b represents group differences with the ADHD Inattention subtype group at $p < .05$

other groups combined were performed as well as an analysis of the combined type versus all other groups. Statistical contrasts found significantly higher incidents of elementary school failure ($t(404) = 2.8, p < .01$), identified learning disabilities, ($t(404) = 3.1, p < .01$), and poor school achievement ($t(404) = 3.5, p < .001$) in a statistical combination of all ADHD subtypes versus the non ADHD diagnosis group. None of the academic variables differentiated the ADHD combined subtype from other subtypes.

Similarly, the non ADHD group had a significantly lower likelihood of exhibiting disruptive behaviour in school ($t(404) = 4.1, p < .001$), displaying problems with peers in school ($t(404) = 3.7, p < .001$), and having early social adjustment problems ($t(404) = 3.4, p < .001$) than the combined means of the ADHD subtypes. The contrast between the combined type of ADHD and other types combined failed to produce significant differences along school functioning variables.

Disruptive Behaviour Disorder Measures.

The Opposition Defiant Disorder Rating Scale. The Oppositional Defiant Disorder Rating Scale (ODD-RS) was completed for the entire sample. Total scores ranged from 0 to 24 with a mean of 9.5 ($SD = 5.9$). The reliability alpha coefficient for the scale was .86. The Pearson product-moment correlation assessing for inter-rater reliability was .88 ($n = 25$).

Individuals meeting the criteria for a diagnosis of Oppositional Defiant Disorder as outlined by the DSM-IV were calculated. The number of individual symptoms for each participant ranged from 0 to 8. The mean number of symptoms was 3.2 ($SD = 2.4$). According to DSM-IV criteria as well as the criteria utilized for ODD-RS, 223 participants (55%) did not have the requisite number of diagnostic features for an ODD diagnosis while 185 (45%) met the requisite number of symptoms. As a result, with strict adherence to DSM-IV guidelines for

diagnosis of ODD, there were only 5 cases of the entire sample with ODD diagnosis without a CD diagnosis. Given that this would have little value for the present research the ODD grouping was not utilized extensively in further analysis. The ODD-RS total score was therefore utilized as a measure of the severity of oppositional defiance for future analyses.

It was first necessary to determine gender and social class differences across this measure. T-tests were performed on ODD-RS total scores, ODD individual items, number of DSM-IV diagnostic features present, and diagnostic threshold reached across gender and social class. It can be seen that there were no significant differences in the rate of ODD diagnosis, the frequency of each individual diagnostic features, or the total score on the ODD-RS across gender (see Table 8). Thus, males and females showed the same rates of oppositional defiance and related diagnostic features. Furthermore, there were no differences in the rate of ODD diagnosis across Social Economic Status.

A Principal Component Analysis was employed to determine the structure of the ODD-RS. Varimax rotation was utilized and all factors with an eigenvalue of greater than 1 were extracted. Results showed a one-factor solution with an eigenvalue of 4.1 that accounted for 51% of the total variance. Component loadings ranged from .58 to .78. Thus, the ODD-RS was interpreted as being a unidimensional construct.

Conduct Disorder Diagnostic Features. Descriptive statistics for individual conduct disorder diagnostic features are presented in Table 9. The mean number of diagnostic features present for each participant was 6.2 ($SD = 3.1$). Number of symptoms ranged from 0 to 15. Using the DSM-IV cut-off of having 3 or more features, 353 (87%) were determined to meet the requirements for a diagnosis of CD. In contrast, only 77 (19%) had ever received a previous formal diagnosis for conduct disorder. Of those who were presently determined to meet the

Table 8

T-test Examining ODD Rating Scale Differences Across Gender

ODD criteria	<u>Gender</u>		Total <i>n</i> = 408	<i>t</i>	<i>p</i>
	Male <i>n</i> = 327	Female <i>n</i> = 81			
Loses temper	1.53 (1.12)	1.64 (.91)	1.55 (1.08)	.84	ns
Argues with adults	1.60 (1.03)	1.57 (.96)	1.59 (1.02)	.22	ns
Actively defies	1.83 (1.05)	1.77 (1.05)	1.82 (1.05)	.48	ns
Deliberately annoys	.60 (.94)	.56 (.88)	.59 (.93)	.35	ns
Blames others	1.31 (1.15)	1.15 (1.14)	1.28 (1.14)	1.11	ns
Easily annoyed	1.00 (1.12)	.96 (.94)	1.00 (1.09)	.32	ns
Angry or resentful	1.25 (1.10)	1.36 (1.03)	1.27 (1.08)	.82	ns
Spiteful or vindictive	.40 (.86)	.42 (.80)	.40 (.84)	.15	ns
ODD-RS total score	9.52 (6.03)	9.42 (5.38)	9.50 (5.90)	.13	ns
Number of DSM-IV criteria	3.23 (2.43)	3.28 (2.23)	3.24 (2.39)	.17	ns
DSM-IV diagnosis ¹	46%	44%	45%	.18	ns

Notes: ns = not significant at $p < .05$; (*sd*).¹ does not include CD exclusion.

Table 9

Means of Diagnostic Features of Conduct Disorder

CD diagnostic feature	<u>Gender</u>		Total (408)	<i>t</i>	<i>p</i>
	Male (327)	Female (81)			
Bullies/threatens	51%	43%	49%	1.2	n/s
Initiates fights	73%	73%	73%	.01	n/s
Uses weapons	29%	11%	25%	3.4	.001
Physically cruel	14%	11%	13%	.70	n/s
Cruel to animals	4%	2%	3%	.53	n/s
Stolen - confronts victim	19%	12%	18%	1.5	n/s
Forced sexual activity	12%	1%	10%	2.9	.004
Fire-setting	15%	11%	14%	.89	n/s
Vandalism	64%	46%	60%	3.0	.004
Break-ins	71%	41%	65%	5.3	<.001
Lies/manipulative	42%	43%	42%	.16	n/s
Stolen - no confrontation	77%	69%	75%	1.4	n/s
Stays out at night	53%	49%	52%	.52	n/s
Runs away from home	45%	59%	48%	2.4	.018
Truant	70%	72%	70%	.33	n/s
Historical diagnosis	19%	20%	19%	.22	ns
Present DSM-IV (3 plus)	88%	80%	87%	1.85	ns
Symptoms before age 10	47%	17%	41%	4.97	<.001
Total symptoms	6.37 (3.13)	5.44 (2.67)	6.19 (3.06)	2.46	.014

DSM-IV Conduct Disorder criteria, 187 (46%) met the requirements as an Adolescent Onset subtype while 166 (41%) were Childhood Onset subtype.

Gender differences were explored through comparisons between the frequencies of individual diagnostic criteria utilizing t-tests. It was determined that males had a significantly greater tendency to involve themselves in the use of weapons ($t(406) = 3.4, p < .001$), forced sexual activity, ($t(406) = 2.9, p < .01$), vandalism, ($t(406) = 3.0, p < .01$), and break-ins ($t(406) = 5.3, p < .001$) than their female counterparts. In comparison, females exhibited a greater likelihood than males of engaging in running behaviours ($t(406) = 2.5, p < .05$). Females and males showed no significant differences in their previous engagements in fighting, bullying, and physical cruelty.

The strongest gender differences were found in the age of onset of conduct disorder. Males in the sample showed a significantly higher probability of exhibiting conduct problems prior to the age of ten, $t(406) = 5.0, p < .001$, and also showed a significantly higher number of diagnostic features of conduct disorder on average than their female counterparts, $t(406) = 2.49, p < .05$. Thus males have an earlier onset of conduct symptoms and were more likely to show a greater range of conduct problems.

Collateral observer ratings were explored against the ODD-RS and the number of diagnostic features of CD present for each individual (CD-sym). Correlations were consistent between these two measures and observer ratings of various constructs. The highest correlations for both the ODD ($r = .41, p < .001$) and CD-sym ($r = .39, p < .001$) measures were with observed short attention span. Additional significant correlations with the ODD-RS included anger management ($r = .32, p < .001$), poor relations with authority ($r = .30, p < .001$), and social problems ($r = .31, p < .001$). Correlations with the number of CD symptoms were lower for all

of these observer ratings. Any relationship between self-esteem, depression or shyness and disruptive behaviour disorders was found to be non-significant or modestly negatively correlated.

Conduct Disorder Criteria Factor Analysis. An exploratory Principal Components Analysis was conducted in order to determine whether there were subsets of conduct items that are relatively independent from one another. The CD criteria were subjected to an exploratory Principle Components Analysis with varimax rotation. Components with eigenvalues greater than one were extracted. The results presented in Table 10 show a four-factor solution.

The four-factor solution accounted for 52% of the total variance. The first factor (aggression) accounted for 26% of the variance. The second factor, reflecting defiance items, accounted for another 11% of the total variance. The third factor was comprised of covert antisocial conduct and added 8% to the variance while the fourth factor was comprised of psychiatric items added 7% to the variance. Correlations between the components ranged from .01 to .30, suggesting that these factors are quite distinct. In this sense, CD items were seen as a better reflection of versatility of offending (aggressive, covert, defiance) rather than viewed as a dimensional phenomenon.

Conduct Disorder Diagnosis. The purpose of CD symptom identification is to be able to make a diagnosis of Conduct Disorder. CD criteria were utilized to make a CD diagnosis and group participants into the subtypes of CD no diagnosis (CD-none), CD adolescent onset (CD-LO), and CD childhood onset (CD-EO) according to DSM-IV specifications. Fifty-five participants (14%) failed to meet the requirements for CD and were therefore placed in the CD-none group. 187 (46%) were placed in the CD-LO subtype group and the remaining 166 (41%) in the CD-EO subtype group. The ratio of males to females was approximately the same across the CD-none group (2.5:1) and CD-LO subtype (2.6:1). The CD-none group and CD-LO

Table 10

Principal Components Analysis of Conduct Disorder Symptoms

CD diagnostic criteria	<u>Loadings</u>			
	Factor 1	Factor 2	Factor 3	Factor 4
Bullies/threatens	<u>.79</u>			
Initiates fights	<u>.73</u>			
Uses weapons	<u>.61</u>			
Physically cruel	<u>.64</u>			
Cruel to animals				<u>.74</u>
Stolen - confronts victim	<u>.44</u>			
Forced sexual activity				<u>.42</u>
Fire-setting				<u>.66</u>
Vandalism			<u>.42</u>	
Break-ins			<u>.57</u>	
Lies/manipulative			<u>.72</u>	
Stolen - no confrontation			<u>.66</u>	
Stays out at night		<u>.81</u>		
Runs away from home		<u>.71</u>		
Truant		<u>.69</u>		

Note: Factor loading less than .40 have been suppressed

subtype did not differ significantly in their ratio of males to females. A post-hoc comparison showed that there is a significantly greater proportion of males in the CD-EO (11:1) versus the CD-none group ($p < .001$) or the CD-LO subtype ($p < .01$).

CD Diagnosis and Rule Breaking Behaviours. CD diagnostic subtypes were first examined in relationship to rates of different types of non-criminal rule breaking/mischievous behaviours. Analysis of variance procedures showed that the CD-LO and CD-EO subtypes had statistically higher incidents of many types of rule breaking behaviour. Perhaps most significant is that schoolyard aggression was significantly higher in the CD-EO subtypes than both of the other subtypes ($t(405) = 6.8, p < .001$). Significant differences across subtypes of CD were noted for the rates of smoking ($F(2, 405) = 16.5, p < .001$) and drug use ($F(2, 405) = 21.5, p < .001$) but none for alcohol use. It is noteworthy that there were no mean differences in substance use (i.e., smoking, drinking, or drugs) between the individual CD-LO and CD-EO subtypes. A significant pattern of increased suspensions or expulsions was also noted from the CD-none group through to the CD-LO and CD-EO subtypes ($p < .001$).

Placement in a special school unit during elementary school for conduct problems (up to age 12) was far more common for the CD-EO subtype ($t(405) = 5.8, p < .001$) than the other two subtypes. Even though the CD-LO subtype showed a greater likelihood than the CD-none subtype to be placed in a special school setting this difference was not statistically significant. Furthermore, a significantly greater proportion of CD-EO youth were not in a regular academic stream during high school than both CD-LO ($t(405) = 3.1, p < .001$) and no CD subtypes ($t(405) = 4.3, p < .001$).

CD Diagnosis and Academic and Social Functioning. Academic functioning variables were explored to determine the presence of differences in academic functioning across CD

subtypes. A series of one-way analyses of variance found that there were significant differences in all academic and social variables across the different subtypes of CD (see Table 11). Planned comparisons between the CD-EO subtype and remaining groups along with the non-CD group and remaining groups were completed. For all the variables subjected to analysis the CD-EO subtype showed significantly poorer functioning than the other two subtypes. Furthermore, the non-CD group showed significantly greater functioning across these variables than the group consisting of any CD subtype.

Post-hoc comparisons between subtypes protecting against Type I error ($p < .05$) found that the CD-EO was more likely to have failed an early grade, to be identified as having a learning disability, be more disruptive, and have early social adjustment problems than the CD-LO group. Furthermore, the CD-LO type could not be differentiated from the non-CD group by academic failure, learning disability, peer relations, or social adjustment concerns. Academic and social problems clearly differentiated the CD-EO from either of the other two groupings. On the other hand, academic and social problems failed to differentiate between CD-LO subtype and the non-diagnosed comparison group.

CD Diagnosis and Family Circumstances. Further explorations of family background measures and CD subtypes were then completed. A series of one-way ANOVAs assessing differences in family factors across ODD diagnosis as well as CD subtypes can be seen in Table 12. Family cohesion variables indicative of early separation from a parental figure and marital conflict in the family home differentiated amongst disruptive behaviour disorder types. In contrast to the previous ADHD subtype findings, parenting style variables indicative of poor parenting practices or unstable home environments were able to differentiate between disruptive behaviour disorder subtypes. Once again, planned contrasts showed that the CD-EO subtype

Table 11

One-way ANOVAs Examining Social Functioning Across Disruptive Behaviour Disorders

	ODD Diagnosis				CD Diagnostic Type				
Criterion	Absent	Present	<i>F</i>	<i>p</i>	None	CD late onset	CD early onset	<i>F</i>	<i>p</i>
	<i>n</i> = 223	<i>n</i> = 185			<i>n</i> = 55	<i>n</i> = 187	<i>n</i> = 166		
<u>Academic</u>									
Failed elementary grade	.46 (.50)	.49 (.50)	.24	ns	.29 _c (.46)	.41 (.49)	.61 _a (.49)	12.0	<.001
Learning disability	.13 (.34)	.21 (.41)	4.2	.041	.04 _c (.19)	.15 _c (.35)	.25 _{ab} (.43)	7.9	<.001
Poor achievement	.59 (.49)	.79 (.41)	20.9	<.001	.44 _{bc} (.50)	.67 _a (.47)	.78 _a (.42)	11.7	<.001
<u>Classroom conduct</u>									
Disruptive in classroom	.44 (.50)	.71 (.45)	31.8	<.001	.31 _{bc} (.47)	.50 _{ac} (.50)	.72 _{ab} (.45)	18.2	<.001
Truant	.65 (.48)	.74 (.44)	4.3	.040	.40 _{bc} (.49)	.70 _a (.46)	.78 _a (.42)	14.6	<.001
<u>Social</u>									
Poor relations school peers	.24 (.43)	.48 (.50)	26.9	<.001	.25 _c (.44)	.26 (.44)	.48 _a (.50)	11.0	<.001
No group activities	.65 (.48)	.79 (.41)	10.0	.002	.45 _{bc} (.50)	.68 _{ac} (.47)	.85 _{ab} (.36)	18.7	<.001
Poor social adjustment	.17 (.38)	.41 (.49)	29.8	<.001	.13 _c (.34)	.21 _c (.41)	.40 _{ab} (.49)	11.5	<.001

Note: (*sd*); _a represents mean difference with CD-none group, _b with CD-LO, and _c CD-EO

Table 12

Summary of One-way Analysis of Variance Examining Family Factors Across DBD Subtypes

Criterion	<u>ODD Diagnosis</u>		<u>CD Diagnostic Type</u>						
	Absent	Present	<i>F</i>	<i>p</i>	None	CD late onset	CD early onset	<i>F</i>	<i>p</i>
	<i>n</i> = 223	<i>n</i> = 185			<i>n</i> = 55	<i>n</i> = 187	<i>n</i> = 166		
<u>Family cohesion</u>									
Age separated-parents	9.3 (6.0)	7.1 (5.6)	14.1	<.001	9.6 _c (5.8)	9.2 _c (5.9)	6.9 _{ab} (5.8)	8.5	<.001
Marital conflict	.37 (.48)	.48 (.50)	4.8	.028	.27 _c (.45)	.39 (.49)	.49 _a (.50)	4.7	.009
<u>Parenting style</u>									
Parental Control	.61 (.49)	.89 (.31)	47.4	<.001	.36 _{bc} (.49)	.71 _{ac} (.46)	.89 _{ab} (.31)	35.4	<.001
Poor parental supervision	.36 (.48)	.52 (.50)	10.2	.002	.29 _c (.46)	.37 _c (.49)	.55 _{ab} (.50)	8.3	<.001
Inconsistent parenting	.47 (.50)	.60 (.49)	8.5	.004	.38 _c (.49)	.48 _c (.50)	.63 _{ab} (.48)	7.2	<.001
Inappropriate discipline	.22 (.41)	.29 (.46)	2.8	ns	.15 (.36)	.24 (.43)	.31 (.46)	3.2	.044
Abusive father	.22 (.42)	.36 (.48)	8.9	.003	.20 (.40)	.25 (.43)	.35 (.48)	3.2	.041
Abusive mother	.10 (.30)	.15 (.36)	2.6	ns	.15 (.36)	.07 _c (.26)	.17 _b (.38)	3.80	.023
Physical abuse (any)	.34 (.48)	.44 (.50)	4.5	.035	.29 _c (.46)	.34 _c (.47)	.48 _{ab} (.50)	4.90	.008
<u>Family instability</u>									
Family criminal history	.41 (.49)	.54 (.50)	7.2	.008	.40 _c (.49)	.37 _c (.49)	.60 _{ab} (.49)	9.7	<.001
Family substance abuse	.52 (.50)	.53 (.50)	.08	ns	.45 (.50)	.47 _c (.50)	.61 _b (.49)	4.3	.015
Placed in group home	.39 (.49)	.65 (.48)	28.8	<.000	.24 _c (.43)	.40 _c (.49)	.72 _{ab} (.45)	30.7	<.001
Sibling placed	.10 (.30)	.17 (.37)	3.7	ns	.02 _c (.13)	.11 (.32)	.19 _a (.40)	6.2	.002

Note: (*sd*); _a represents mean difference with CD-none group, _b with CD-LO, and _c CD-EO

is significantly more likely to be separated from a parent at an early age ($t(405) = 4.0, p < .001$), be more likely to be poorly supervised ($t(405) = 4.1, p < .001$), be physically abused ($t(405) = 3.1, p < .01$), and have parents involved in criminal activity ($t(405) = 3.9, p < .001$) than those not having an early onset of conduct problems. Post-hoc analyses further revealed that CD-EO and CD-LO could be differentiated on all family variables with the exception of inappropriate discipline used in the home and having a sibling placed in a group home. Thus, not only did the CD-EO subtype differ from the non diagnosed group but was also found to be significantly more likely to have an unstable and chaotic home environment than the CD-LO subtype.

Further studies of these differences were conducted by an examination of mean differences across the CD-LO subtype and the no CD diagnosis group. After correcting for the possibility of Type I error it was found that the only variable that distinguished between these groups was a lack of parental control. Thus, family cohesion, stability, and parenting style did not significantly differ between those not diagnosed with CD and those having an onset of CD during their adolescence.

ADHD Comorbid with CD

During the next stage of the analysis the differences in disruptive behaviour disorders and their course were examined by merging ADHD and CD types. Theoretical importance has been placed on those with both ADHD and CD in the past (e.g., Lynam, 1998). Therefore, unique categories were created that attempted to distinguish between the courses of these two disorders. Scores above the 93rd percentile on the ADHD-RS were used as the determinant of the presence of the requisite number of diagnostic features of ADHD. However, onset prior to the age of 7 was added to determine the presence of ADHD. Thus, as DSM-IV dictates, ADHD was required to have emerged early. DSM-IV criteria were also used to diagnosis the CD subtypes.

By merging the course of these two variables four distinct groups were created. One group represented those participants who did not meet the requirements for either an early diagnosis of ADHD or a CD diagnosis. The three other categories included those with late onset CD only, those with early onset CD only, and those with ADHD with comorbid CD (irrespective of onset). Together these categories were considered the Disruptive Behaviour Disorder classification scheme (DBD). The frequencies were as follows: 54 (13%) in the no diagnosis group, 180 (44%) in the CD-LO only, 135 (33%) CD-EO only, and 39 (10%) in the ADHD/CD group. The break-down between genders for these categories is as follows: 38 males and 16 females without either diagnosis; 132 males and 48 females in the CD-LO group, 123 males and 12 females in the CD-EO group, and 34 males and 5 females in the ADHD comorbid CD group. As seen, males are over-represented in the early onset categories. There were no participants who met the requirements for early onset ADHD and did not have at least minimal conduct problems. This result was unexpected and negated CD comparisons with a “pure” ADHD group.

This DBD classification scheme was subjected to a series of one-way ANOVAs examining if measures of early functioning and family background could distinguish amongst these types. Again, early academic markers distinguished amongst these groups. Specifically, there were group differences in a failed early grade ($F(3, 404) = 7.5, p < .001$), being identified with a learning disability ($F(3, 404) = 6.2, p < .001$), and placement in a special support unit ($F(3, 404) = 20.9, p < .001$). Family variables that distinguished amongst groups were age at separation ($F(3, 404) = 8.0, p < .001$), family conflict ($F(3, 404) = 3.8, p < .05$), inadequate supervision ($F(3, 404) = 6.5, p < .001$), loss of parental control ($F(3, 404) = 25.2, p < .001$), inconsistent parenting ($F(4, 403) = 4.4, p < .01$), family criminal involvement ($F(3, 404) = 6.4, p < .001$), victim of abuse ($F(3, 404) = 4.7, p < .01$) and placement in a group home ($F(3, 404)$

= 20.9, $p < .001$). Notably, inappropriate discipline and neglect did not distinguish amongst these groups.

A series of pre-planned contrasts were then employed to compare the ADHD comorbid group and non-comorbid groups. In these analyses age at separation was shown to be significantly lower in the ADHD comorbid group ($t(404) = 2.6, p < .01$) but marital breakdown was not significantly different across these comparison groups. Furthermore, none of the parenting style variables or abuse factors were found to reach statistical significance in differentiating across groups. A higher rate in family criminal involvement in the ADHD comorbid group was found ($t(404) = 2.3, p < .01$). The ADHD comorbid group also scored significantly higher on all measures of poor academic functioning, poor school conduct, and social maladjustment when compared to the non-ADHD comorbid groups.

A second set of contrasts explored differences in the ADHD comorbid group with the CD-EO group. No significant differences were found in family background measures. However, the ADHD comorbid group was more likely to have been placed in a special adjustment class setting ($t(404) = 4.5, p < .01$) than the CD-EO counterpart, be more disruptive ($t(404) = 2.6, p < .01$), and achieve less academically ($t(404) = 2.7, p < .01$). Thus, those with early onset ADHD with comorbid CD scored the same on home stability factors as those in other groups but performed worse academically and were more disruptive in a school setting.

A series of post-hoc comparisons utilizing the Bonferroni correction ($p < .05$) were utilized to examine individual group differences in the CD only classifications. It was felt that after removing ADHD groups that the pattern of association between these variables may differ from earlier analyses. It was found that the CD-LO only versus CD-EO only could be differentiated by the age at parental separation ($p < .01$), poor parental supervision ($p < .01$) and

parental criminal offending ($p < .01$). In this sense, those with early onset versus late onset were differentiated by primarily family stability and parenting factors. Family conflict did not appear at higher rates in the CD-EO only group than the CD-LO only group. Furthermore, low academic achievement, learning disabilities, and attendance in regular stream did not differentiate amongst these two classifications. No pattern of differences were found in these contrasts than for earlier comparisons without excluding an ADHD element.

Psychopathy Measures

Two measures were utilized in the current study that attempted to measure psychopathy. Descriptive statistics and reliability estimates for the Youth Version of the Psychopathy Checklist (PCL:YV) are outlined in Table 13. Also included are the inter-correlations between the factor scores and the total scores. It can be seen that the two factors on the PCL:YV have a correlation of .68 ($p < .001$) and that the Factor II score is highly correlated with the total score.

In Table 13 the means scores on the PCL:YV across genders are presented. Although the PCL:YV total score and Factor I scores were greater for males, this did not reach significance levels. In contrast, scores for the PCL:YV Factor II component was significantly greater for males than females, $t(406) = 2.15, p < .05$. Differences in individual item scores revealed several significant gender differences. It was found that males had significantly higher scores on the items measuring grandiosity ($t(406) = 2.20, p < .05$), sensation seeking ($t(406) = 2.2, p < .05$), callousness ($t(406) = 3.3, p < .01$), shallow affect ($t(406) = 2.3, p < .05$), early behavioural problems ($t(406) = 5.5, p < .001$), impulsivity ($t(406) = 2.1, p < .05$), seriousness of criminal behaviour ($t(406) = 3.0, p < .01$), and criminal versatility ($t(1, 406) = 2.20, p < .05$). In contrast, females had higher scores on impersonal sexual behaviour ($t(406) = 2.2, p < .01$) and the

Table 13

Descriptives, Alpha Coefficients, and Inter-correlations for the PCL:YV

	Total score	Factor I	Factor II
PCL:YV Total score	1.00		
PCL:YV Factor I	.88**	1.00	
PCL:YV Factor II	.93**	.68**	1.00
Males			
M	18.9	5.8	11.0 _a
SD	8.7	3.9	4.6
Females			
M	17.3	5.4	9.8 _a
SD	8.6	3.7	4.7
Totals			
M	18.60	5.70	10.75
SD	8.72	3.81	4.61
Alpha	0.78	0.63	0.80

Note: _a significant difference at $p < .05$

conning/manipulative item ($t(406) = 4.8, p < .001$). No additional gender differences in individual PCL:YV items were statistically significant.

Differences in PCL:YV across SES were tested. The PCL:YV total score ($F(3, 404) = 5.02, p < .01$) and Factor II ($F(3, 404) = 7.03, p < .001$) scores were found to differ across social economic status. In both cases, as social economic class increased from non-working poor to upper class, scores on the PCL:YV decreased. Several observer ratings were found to be significantly correlated with PCL:YV as well as the factor scores. The highest correlations were found between the PCL:YV total score and observer ratings of an absence of plans ($r = .52, p < .001$) short attention span ($r = .45, p < .001$), and impulsivity ($r = .34, p < .001$). Notably, both low self-esteem ($r = -.21, p < .001$) and shyness ($r = -.19, p < .001$) showed significant negative correlations with the PCL:YV total score. Therefore, as low self-esteem ratings or shyness increased, corresponding scores on the PCL:YV decreased.

The Child and Adolescent Taxon Scale (CAT) was scored for all participants and was used as an index of psychopathy in adolescence. Some changes to the original scoring were completed based on observed frequencies in order to allow for some variability in the individual items. Item 1, arrested before the age of 16, was modified to reflect being arrested before the age of 12, due to a lack of any variability on the original scoring of this item. Furthermore, item 4, conduct disorder criteria, was modified to split the current sample into thirds, given the large percentage of the current sample that easily met the conduct disorder item criteria as specified by the CAT scoring guide. As a result, a score of 0 reflected 0 to 4 CD diagnostic criteria being met, 1 reflected 5 or 6 criteria being met, while a score of 2 reflected 7 or more criteria present. Total scores ranged from 0 to 16 with a mean of 8.5 ($SD = 3.5$) on the CAT. The alpha coefficient was .61.

The Pearson correlation coefficient between the CAT and the PCL:YV total score was .67 ($p < .001$). Similarly high correlations were found between the CAT total score and Factor I ($r = .48, p < .001$) and Factor II ($r = .71, p < .001$) on the PCL:YV. Slightly higher scores on the CAT for males were found but this did not reach statistical significance. Scoring differences on the social economic status indicator were found on the CAT but this was not a linear relationship. Thus, as SES declined the CAT did not increase. Instead, the welfare SES group had significantly higher scores than working poor ($p < .05$) or middle class ($p < .001$) but did not differ significantly from the upper class group. In fact, the upper class group did not differ significantly on their CAT scores from all other social economic classes.

PCL:YV Factor Structure. Most recent studies examining the factor structure of the PCL-R or PCL:YV have shown mixed results (see Cooke & Michie, 2001 or Kosson et al., 2002). The PCL:YV has been presented as an instrument comprised of two primary factors (Forth, Kosson, & Hare, in press). One factor is hypothesized to reflect differences in personality/affective elements while the other reflects deviance/lifestyles elements of the psychopath. Most recent research has recommended the use of a single score. Exploratory factor analysis was therefore conducted on the current sample to determine the underlying structure in a sample of high risk youths. A Principle Components Analysis (PCA) was utilized using varimax rotation in which all items were free to load on any factor.

The resultant Components Matrix is presented in Table 14. Together, the four-factor solution accounted for 46% of the variance. Loadings were typically in the good range with several items loading on each factor. The communalities suggest that, with the exception of glibness, each item is well represented in the final solution. Notably, impulsivity loads on two factors and glibness on none.

Table 14

Rotated Component Matrix for the PCL:YV

PCL:YV items	<u>Loadings</u>			
	Factor 1	Factor 2	Factor 3	Factor 4
PCL:YV1 Glibness/superficial charm				
PCL:YV2 Grandiose sense of self		<u>.60</u>		
PCL:YV3 Need for stimulation/boredom			<u>.52</u>	
PCL:YV4 Pathological lying				<u>.70</u>
PCL:YV5 Conning/manipulative				<u>.71</u>
PCL:YV6 Lack of remorse		<u>.56</u>		
PCL:YV7 Shallow affect		<u>.58</u>		
PCL:YV8 Callous/lack of empathy		<u>.67</u>		
PCL:YV9 Parasitic lifestyle			<u>.67</u>	
PCL:YV10 Poor anger control	<u>.57</u>			
PCL:YV11 Impersonal sexual behaviour				
PCL:YV12 Early behavioural problems	<u>.42</u>			
PCL:YV13 Lack goals			<u>.55</u>	
PCL:YV14 Impulsiveness	<u>.50</u>		<u>.55</u>	
PCL:YV15 Irresponsibility			<u>.67</u>	
PCL:YV16 Failure to accept responsibility		<u>.48</u>		
PCL:YV17 Unstable interpersonal relations				<u>.53</u>
PCL:YV18 Seriousness of delinquency	<u>.82</u>			
PCL:YV19 Violation of conditional release	<u>.63</u>			
PCL:YV20 Criminal versatility	<u>.75</u>			

Note: Factor loading less than .40 have been suppressed

The initial factor extracted was interpreted as representing antisocial conduct. It alone accounted for 24% of the variance. The second factor, thought to reflect affective components of psychopathy, added another 9% to the explained variance. The third factor, representing self-regulation deficits, contributed 7% while the final factor, reflecting interpersonal style added the final 6%. Although this solution allowed for some interpretation of the factors, these factors did not replicate themselves when examined across genders or age.

There was no clear evidence that items on PCL:YV Factor I or Factor II loaded on separate factors. There seems little utility from the current analysis in attempts to interpret a two-factor solution. Overall, the current PCA does not support the use of a two-factor model of the PCL:YV, although direct comparisons between factor solutions were not undertaken. It seems plausible that the PCL:YV consists of more than two factors and that these factors may be dependent on the sample used. Although the factor scores as specified in the coding manual were used for the current analyses, future analyses may consider abandoning these distinctions until further evidence validates them.

Identifying Psychopaths. The primary purpose of the PCL:YV is to identify or diagnose a particular class of individuals referred to as psychopaths. Participants in the current study were classified according to conventional PCL-R classification procedures. Those scoring 30 and above on the instrument were placed in the “high psychopathy” or psychopath group, while those scoring from 20 to 29 and those scoring less than 20 were placed in the “moderate psychopathy” and “non-psychopathic” groups, respectively. Frequencies revealed that 43 participants or 11% of the sample were considered to be in the high psychopathy range. Of the remaining sample, 199 (49%) were considered non-psychopathic while 166 (41%) were placed in the moderately psychopathic category. By gender, 39 males and 4 females (10:1 ratio) were in the high

psychopathy group, 131 males to 35 females in the moderate psychopathy group (approx. 4:1), and 157 males to 42 females (approx. 4:1) in the non-psychopathy group. Thus, there are a disproportionate number of males classified as psychopaths.

Psychopathy and Academic and Social Functioning. A series of one-way ANOVAs examining differences in academic performance, classroom conduct, and social functioning across PCL:YV were conducted and is presented in Table 15. Significant differences can be found between all dependent variables across the PCL:YV categories. Initial contrasts showed that psychopaths could be differentiated amongst the other two groups on early elementary school failure ($t(405) = 2.8, p < .01$), disruptive classroom behaviour ($t(405) = 4.3, p < .001$), truancy ($t(405) = 2.5, p < .05$), problems with peers ($t(405) = 5.7, p < .001$), and organizational involvement ($t(405) = 3.3, p < .01$).

Post-hoc comparisons between the high psychopathy and moderate psychopathy groups using the Bonferroni correction found that the only mean differences were found in problems with peer interactions ($p < .01$). Thus, the moderate and highly psychopathic groups did not differ across a multitude of variables with the exception of poor peer relations in which the highly psychopathic group showed more marked problems. Thus, most differences amongst school related variables could be attributed to differences between the highly psychopathic and non-psychopathic group.

Psychopathy and Family Circumstances. In addition, a series of one-way ANOVAs were utilized to explore family differences across categories of youth psychopathy. As shown in Table 16, there are statistical differences in family cohesion, parenting style, and stability variables across psychopathy categories. Contrasts were utilized to determine whether the high

Table 15

Summary of One-way ANOVAs Examining School Performance Variables Across PCL:YV

Categories

<u>PCL:YV Classification</u>					
Criterion	Low	Moderate	High	<i>F</i>	<i>p</i>
<u>Academic</u>					
Failed elementary grade	.40 _c (.49)	.51 (.50)	.67 _a (.47)	6.5	.002
Learning disability	.11 _b (.31)	.23 _a (.42)	.23 (.43)	5.7	.004
Poor achievement	.55 _{bc} (.50)	.81 _a (.40)	.81 _a (.39)	17.2	<.001
<u>Classroom conduct</u>					
Disruptive in classroom	.39 _{bc} (.49)	.69 _a (.46)	.86 _a (.35)	29.5	<.001
Truant	.56 _{bc} (.50)	.80 _a (.40)	.86 _a (.35)	15.7	<.001
<u>Social</u>					
Poor relations school peers	.21 _{bc} (.41)	.41 _{ac} (.49)	.72 _{ab} (.45)	25.6	<.001
No group activities	.59 _{bc} (.49)	.82 _a (.39)	.93 _a (.26)	18.8	<.001
Poor social skills	.20 _{bc} (.40)	.34 _a (.48)	.40 _a (.49)	6.8	.001

Note: (*SD*); _a represents mean difference with Low, _b with Moderate and, _c High psychopathy groups

Table 16

Summary of One-way ANOVAs Examining Family Variables Across PCL:YV Categories

<u>PCL:YV Classification</u>					
Criterion	Low	Moderate	High	<i>F</i>	<i>P</i>
<u>Family cohesion</u>					
Age separated -parents	9.77 _{bc} (5.8)	7.04 _a (5.7)	6.19 _a (5.3)	13.5	<.001
Marital conflict	.33 _{bc} (.47)	.47 _a (.50)	.60 _a (.49)	7.3	.001
<u>Parenting style</u>					
Parental Control	.54 _{bc} (.50)	.90 _a (.30)	.98 _a (.15)	45.6	<.001
Poor parental supervision	.30 _{bc} (.46)	.55 _a (.50)	.60 _a (.49)	15.0	<.001
Inconsistent parenting	.46 _c (.50)	.57 (.50)	.70 _a (.46)	5.1	.007
Inappropriate discipline	.23 (.42)	.26 (.44)	.35 (.48)	1.4	N/s
Abusive father	.23 _c (.42)	.30 _c (.46)	.51 _{ab} (.51)	7.4	.001
Abusive mother	.11 (.31)	.11 (.32)	.23 (.43)	2.8	ns
Physical abuse (any)	.32 _c (.47)	.43 (.50)	.53 _a (.50)	4.9	.008
<u>Family instability</u>					
Family criminal history	.38 _{bc} (.48)	.54 _a (.50)	.63 _a (.49)	8.0	<.001
Family substance abuse	.47 (.50)	.55 (.50)	.65 (.48)	3.0	ns
Placed in group home	.31 _{bc} (.46)	.67 _a (.47)	.81 _a (.39)	38.8	<.001
Sibling placed	.09 _{bc} (.29)	.16 _a (.36)	.23 _a (.43)	3.9	.022

Note: (*SD*); _a represents mean difference with Low, _b with Moderate and, _c High psychopathy groups

psychopathy group, or psychopaths, could be differentiated from the remaining two groups. For all variables examined, with the exceptions of inappropriate discipline and sibling placed in group homes, psychopaths were statistically differentiated from non-psychopaths.

Post-hoc analyses examining differences between the high psychopathy and moderate psychopathy category revealed that the only significant differences between these two groups after utilizing a Bonferroni correction was an abusive father ($p < .05$). Similar to the earlier contrast, the high psychopathy group could only be differentiated from the low psychopathy group on most variables and was not statistically different in many respects to the moderate psychopathy group. Regardless, there is evidently a trend in the direction of more social, academic, and family related problems as the degree of assessed psychopathy increases.

Risk/Needs Instrument

The YLS/CMI was retrospectively completed at intake and at termination (retest) for all 408 participants. The psychometric properties of the YLS/CMI (termination) are presented in Table 17. Total scores ranged from 0 to 39 ($M = 20.6$, $SD = 9.2$). Reliability estimates in the form of Cronbach's alpha are displayed. The coefficient alpha for each of the YLS/CMI components and the total score ranged from an alpha of .60 on the leisure/recreation subcomponent to an alpha of .82 on the substance abuse subcomponent. The coefficient alpha of the YLS/CMI total score ($\alpha = .91$) was acceptable.

Gender and SES differences were explored for the instrument. Means and standard deviations for gender are also presented in Table 17. ANOVAs determined no significant differences in the YLS/CMI total score or any of the subcomponents across gender. In contrast, social economic groups could be distinguished based on their YLS/CMI total score. With the exceptions of the substance abuse subcomponents, the social economic class differed

Table 17

Means, Standards Deviations and Correlation Matrix for the YLS/CMI

YLS/CMI	Total	Sub1	Sub2	Sub3	Sub4	Sub5	Sub6	Sub7	Sub8
YLS/CMI total	1.00								
1. Criminal history	.65	1.00							
2. Family	.65	.30	1.00						
3. Education	.77	.33	.47	1.00					
4. Associates	.75	.47	.39	.52	1.00				
5. Substance abuse	.55	.36	.22	.28	.48	1.00			
6. Leisure/recreation	.74	.41	.44	.57	.57	.43	1.00		
7. Personality	.66	.34	.31	.46	.35	.09*	.35	1.00	
8. Attitudes	.77	.38	.44	.58	.51	.28	.52	.57	1.00
<hr/>									
Total sample									
<i>M</i>	20.62	2.38	3.17	3.68	2.50	1.95	1.75	2.98	2.22
<i>SD</i>	9.2	1.7	1.8	2.0	1.4	1.7	1.0	2.1	1.6
alpha	.91	.75	.69	.71	.73	.82	.60	.75	.71
<hr/>									
Males ¹									
<i>M</i>	20.76	2.41	3.14	3.76	2.51	1.90	1.75	3.04	2.26
<i>SD</i>	9.2	1.7	1.8	2.1	1.4	1.7	1.0	2.1	1.6
<hr/>									
Females ¹									
<i>M</i>	20.06	2.28	3.32	3.40	2.42	2.12	1.75	2.73	2.04
<i>SD</i>	8.9	1.7	1.8	1.9	1.3	1.7	1.1	1.8	1.6

* correlation not significant at $p < .05$; all other significant at $p < .001$ ¹ There are no significant gender differences across YLS/CMI total score and subcomponent scores

significantly on their YLS/CMI scores including criminal history ($t(404) = 4.22, p < .001$), family problems ($t(404) = 5.99, p < .001$), education ($t(404) = 3.10, p < .01$), leisure ($t(404) = 3.57, p < .01$), personality ($t(404) = 2.41, p < .05$), and attitudes ($t(404) = 2.73, p < .01$). Upon examination, all subcomponent scores were highest in the lowest economic group.

YLS/CMI total scores can be used to place juvenile offenders into four categories of risk. Scoring procedures for these categories have been specified and are labeled “low risk”, “moderate risk”, “high risk”, and “very high risk”. These suggested risk category designations were then used for subsequent analyses. In the current study, 49 participants (12%) were classified as low risk, 178 (44%) moderate risk, 162 (40%) high risk, and 19 (5%) very high risk. A break down by gender places 39 males and 10 females in the low risk category, 143 males and 35 females in the moderate risk category, 128 males and 34 females in the high risk category, and 17 males and 2 females in the very high risk category. Notably, these categories are all an approximate 4:1 ratio of males to females with the exception of the very high risk category, where there is an over-representation of males (8.5:1).

An examination of the Need Factors for both males and females found no significant differences across gender. Therefore, males and females were determined to have the same criminogenic needs. SES examinations through a series of contrasts examining SES as the independent measure were completed after ANOVAs identified group differences in Need Factor scores across social class. No significant differences were found for the substance abuse, peer relations, and personality/behaviour Need Factor scores across SES categories.

Post-hoc comparisons were made between individual SES groups on each Need Factors where significant differences were identified. It was determined that the poorest class had a significantly higher criminal history Need Factor score than both the lower and middle class

groups. They were not more likely to have a higher criminal history Need Factor score than the upper class group. This same pattern was exhibited for the education Need Factor. The poorest class was also found to have significantly higher scores of the family Need Factor than each of the other three SES categories. In contrast, the upper class group, with the exception of the Family Need factor, showed no differences in Need Factor scores with the other social economic classes.

Due to the YLS/CMI consisting of many of the academic performance, social functioning or family background factors that have been used in previous analyses there seemed little advantage in exploring these differences across total score or risk categories.

Factor Analysis of Need Factors. An exploratory PCA was completed on the Need Factors of the YLS/CMI. All 8 were entered to determine if there were separate underlying factors. All Factors with an eigenvalue greater than 1 were extracted. The result was a two-factor model that accounted for 62% of the total variance. The factor loadings can be seen in Table 18. Factor 1 was comprised of all Need Factors with the exception of Substance Abuse, which was the only item to load on the second factor. Thus, substance abuse problems during adolescence have a different underlying structure than all other Need Factors.

Dimensional Relationships Between Instruments

Determining the correlations between the YLS/CMI, PCL:YV, CAT, ADHD-RS and other disruptive behaviour disorder measures was the next step. A correlation matrix examining the relationships between these measures is presented in Table 19. For these analyses summed scoring was used for each measure of ADHD-RS and ODD-RS. The number of symptoms of CD was utilized as a dimensional index of the severity of CD.

Table 18

Principal Components Analysis of YLS/CMI Need Factors

Need Factors	<u>Loadings</u>	
	Factor 1	Factor 2
1. Criminal history	<u>.54</u>	
2. Family	<u>.66</u>	
3. Education	<u>.80</u>	
4. Associates	<u>.68</u>	
5. Substance abuse		<u>.81</u>
6. Leisure/recreation	<u>.72</u>	
7. Personality	<u>.74</u>	
8. Attitudes	<u>.83</u>	

Note: Factor loading less than .40 have been suppressed

Table 19

Correlation Matrix of Measures of Risk, Psychopathy, and Disruptive Behaviour

Disorders

	YLSI	PCL	PCL1	PCL2	CAT	ADHD	IA	Hyp	ODD	CD
YLS/CMI total	1.00									
PCL:YV Total score	.82	1.00								
PCL:YV Factor I	.64	.88	1.00							
PCL:YV Factor II	.82	.93	.68	1.00						
CAT	.71	.67	.48	.71	1.00					
ADHD-RS total	.54	.62	.52	.62	.58	1.00				
ADHD-RS IA	.52	.59	.48	.60	.56	.94	1.00			
ADHD-RS HI	.49	.57	.50	.55	.52	.93	.74	1.00		
ODD-RS total	.65	.70	.62	.64	.52	.57	.54	.51	1.00	
CD-sym	.69	.78	.65	.75	.70	.57	.54	.52	.59	1.00

Note: all correlations significant at $p < .001$ level

Moderate to high significant correlations were found between the YLS/CMI and all other scales. In particular, it can be seen that the PCL:YV total score ($r = .82, p < .001$) and Factor II score ($r = .82, p < .001$) were the most highly correlated measures with the YLS/CMI total score. However, disruptive behaviour disorder scales were found to be significantly correlated to the YLS/CMI total score. For instance, the CD-sym measure ($r = .69, p < .01$) and ODD-RS score ($r = .65, p < .01$) were highly correlated with the YLS/CMI total score. Thus, as risk increased as measured by the YLS/CMI, so did indications of psychopathy, ADHD, Oppositional Defiance and Conduct Disorder.

The CAT score was found to be significantly and highly correlated with the YLS/CMI total score ($r = .71, p < .001$), with the Factor II score of the PCL:YV ($r = .71, p < .001$) and CD ($r = .70, p < .001$) close behind. The correlation coefficient between the Factor I score and the CAT was moderate ($r = .49, p < .001$). Uniformly, as CAT scores increased measures of risk and behavioural problems increased significantly.

The ADHD-RS total score showed mostly moderate correlations with other instruments but was most highly correlated with the PCL:YV total score ($r = .62, p < .001$) and the Factor II score ($r = .62, p < .001$). The Inattention subcomponent of the ADHD-RS showed a higher correlation ($r = .60, p < .001$) with the PCL:YV Factor II score than the Hyperactivity-Impulsivity subcomponent ($r = .55, p < .001$), although this difference was not significant. Thus, as measures of psychopathy increased, corresponding increases in ADHD and its subcomponents significantly increased. The measure of CD symptoms displayed high correlations with the total score on the PCL:YV ($r = .78, p < .001$) and the Factor II score ($r = .78, p < .001$). Correlations of this magnitude suggest a high conceptual overlap between these two measures.

An important feature of the YLS/CMI is its capacity to identify Need Factors. The subcomponents, or Need Factors, on the YLS/CMI represent need areas that assist in the case management of youth by identifying potential targets for intervention. Higher scores on each Need Factor represent a higher need for intervention in that area. An examination of these Need Factors scores for the current study was therefore undertaken.

The correlations between Need Factor scores were then examined in relationship to measures of psychopathy, ADHD-RS, and other disruptive behaviour disorder scales. The correlations are presented in Table 20. The criminal history Need Factor was most highly correlated with the PCL:YV Factor II score ($r = .61, p < .001$) but also showed moderate and significant correlations with ADHD-RS total score ($r = .35, p < .001$). In fact, the Need Factors in the domains of family ($r = .43, p < .001$), education ($r = .61, p < .001$), peer relations ($r = .58, p < .001$), and leisure/recreation ($r = .57, p < .001$) all showed their highest single correlation coefficient with the PCL:YV Factor II score. Thus, as these needs were found to increase, the score on the lifestyle component of the PCL:YV also significantly increased.

The only Need Factor that did not show a moderate correlation coefficient with psychopathy or disruptive behaviour scales was substance abuse. Specifically, the substance abuse Need Factor score was modestly correlated with ADHD total score ($r = .13, p < .05$) and the subcomponents of inattention ($r = .13, p < .05$) and hyperactivity-impulsivity ($r = .12, p < .05$). The highest correlate with the substance abuse Need factor score was the CAT scale ($r = .45, p < .001$).

All measures of psychopathy and disruptive behaviour disorders showed high correlation coefficients with the personality/behavior Need Factor. For the PCL:YV scores as well as CD, ODD-RS, and ADHD-RS, Personality/Behavior Need factor was the single highest individual

Table 20

Correlations Between YLS/CMI Subcomponents and the PCL:YV, CAT, and Disruptive Behaviour Disorder Scales

	<u>Measures</u>								
	PCL tot	PCL FI	PCL FII	CAT	ADHD tot	ADHD IA	ADHD HI	ODD tot	CD sym
YLS/CMI total	.82	.64	.82	.71	.54	.52	.49	.65	.69
1. Criminal history	.58	.41	.61	.50	.35	.32	.34	.34	.58
2. Family	.41	.30	.43	.42	.27	.26	.25	.37	.32
3. Education	.59	.46	.61	.49	.42	.42	.37	.47	.50
4. Associates	.56	.41	.58	.51	.32	.30	.29	.37	.51
5. Substance abuse	.34	.22	.36	.44	.13*	.13*	.12*	.12*	.27
6. Leisure/recreation	.57	.44	.57	.42	.31	.29	.28	.33	.42
7. Personality	.72	.62	.69	.57	.63	.62	.55	.84	.61
8. Attitudes	.71	.64	.66	.50	.47	.44	.44	.60	.58

* significant at $p < .05$; all others significant at $p < .001$

correlate. In particular, the highest correlation with this Need Factor was the ODD-RS total score ($r = .84, p < .001$). Thus, the personality/behaviour Need Factor of the YLS/CMI appears to be measuring many of these constructs outlined in oppositional defiance.

Additionally, the attitude/orientation Need Factor consistently demonstrated significant and moderate correlations with psychopathy measures as well as disruptive behaviour disorder scale scores. Notable, was that the ADHD-RS total score showed a significant correlation with this Need Factor ($r = .47, p < .001$). Thus, as antisocial attitudes or orientation scores increase significant increases in psychopathy and disruptive behaviour scale scores were found.

Factor Analysis of Instruments. All instrument total scores were subjected to an exploratory factor analysis. PCA was undertaken with factors being extracted with eigenvalues greater than one. A one-factor model was extracted that accounted for 71% of the total variance. Factor loadings ranged from a low of .76 with ADHD-RS to .92 for the PCL:YV. It was quite clear in this case that these instruments could be explained by one underlying factor.

Categorical Relationships Between Measures.

YLS/CMI Risk Categories. The correlations between the YLS/CMI total score and all the other instruments have already been found to be significant and high. Most researches have presented data on the YLS/CMI through their risk categories that were described earlier. Several one-way ANOVAs were completed to determine the scores on of the various other measures across YLS/CMI risk categories. It can be seen in Table 21 that YLS/CMI risk categories can all be differentiated by their scores on PCL:YV total score ($F(3, 404) = 178.4, p < .001$), CAT ($F(3, 404) = 107.3, p < .001$), and CD-sym ($F(3, 404) = 100.1, p < .001$). Thus, as risk levels increase on the YLS/CMI levels of psychopathy and CD also increase. Similar differences in scores for the remainder of the disruptive behaviour disorder scales are evident. In every

Table 21

Psychopathy and Disruptive Behaviour Disorder Scale Scores Across Risk Categories

	<u>YLS/CMI Risk Category</u>				<i>F</i>	<i>p</i>
	Low (49)	Moderate (178)	High (162)	Very high (19)		
PCL:YV total score	6.2	15.4	24.5	30.1	176.9	< .001
PCL:YV Factor I	1.7	4.5	7.8	9.7	75.0	< .001
PCL:YV Factor II	3.8	9.2	13.9	16.2	178.0	< .001
CAT score	4.2	7.4	10.4	13.4	105.5	< .001
CD total symptoms	2.7	5.1	7.9	10.3	99.2	< .001
ODD-RS	2.7	8.1	12.3	16.7	70.3	< .001
ADHD-RS Total score	5.4	9.6	19.2	28.1	46.5	< .001
ADHD-RS IA	3.3	6.2	10.9	15.7	40.7	< .001
ADHD-RS HI	2.1	3.3	8.3	12.4	37.4	< .001

Note: (*n*)

instance, as the risk level increased from low to very high disruptive behaviour disorder scales also increased.

ADHD and CD Diagnosis. An important issue was to determine whether ADHD subtypes (identified by the ADHD-RS measure) and CD subtypes could be differentiated by risk or degrees of psychopathy. ADHD subtypes and CD subtypes were therefore subjected to a series of one-way ANOVAs with measures of psychopathy and the YSL/CMI and its subcomponents held as the dependent measures (see Table 22). When examining the subtypes of ADHD the measures of risk and psychopathy were significantly different across ADHD subtypes.

Several pre-planned contrasts were made to determine the nature of these differences. The first series determined that the no ADHD group had significantly lower scores on all measures of risk and psychopathy than the comparison group that had a diagnosis. For instance, the non-ADHD diagnosis group had significantly lower scores on the YLS/CMI than the groups receiving a diagnosis ($t(404) = 5.7, p < .001$). The second series of contrasts showed that the combined group had significantly higher scores on the YLS/CMI ($t(404) = 2.3, p < .05$), PCL:YV ($t(404) = 2.5, p < .05$), and CAT ($t(404) = 2.8, p < .01$) than the mean scores for all other groups combined. This was not the case for the PCL:YV Factor I scores. Therefore, the combined subtype of ADHD appears to have higher levels of psychopathy and risk than those without an ADHD combined diagnosis. Despite not reaching significance levels, on all measures of psychopathy and risk the combined type of ADHD scored higher on the dependent measure than ADHD-HI subtype, which in turn scored higher than the ADHD-IA subtype.

These same dependent measures were utilized in a series of one-way ANOVAs using CD subtypes (i.e., CD-none, CD-EO, and CD-EO) as the independent factor. Again, YLS/CMI,

Table 22

Summary of One-way ANOVAs Examining Measures of Risk, and Psychopathy Across ADHD and CD Subtypes

Criterion	ADHD Diagnostic Type ¹				<i>F</i>	<i>p</i>
	None (<i>n</i> =354)	IA (<i>n</i> =7)	HI (<i>n</i> =32)	Both (<i>n</i> =15)		
YLS/CMI total	19.5 _{cd} (8.9)	25.7 (10.3)	28.1 _a (5.2)	30.1 _a (6.4)	16.9	<.001
PCL:YV Total score	17.4 _{cd} (8.5)	22.9 (8.8)	26.5 _a (4.8)	28.3 _a (4.5)	20.4	<.001
PCL:YV Factor I	5.2 _{cd} (3.7)	8.7 (4.4)	8.8 _a (3.1)	8.9 _a (2.8)	15.4	<.001
PCL:YV Factor II	10.2 _{cd} (4.6)	12.3 (4.1)	14.6 _a (2.6)	15.5 _a (2.1)	16.9	<.001
CAT	8.0 _{bcd} (3.4)	11.9 _a (2.7)	10.8 _a (2.5)	12.9 _a (1.9)	19.2	<.001

	CD Diagnostic Type ²			<i>F</i>	<i>p</i>
	None (<i>n</i> =55)	Late Onset (<i>n</i> =187)	Early Onset (<i>n</i> =166)		
YLS/CMI total	10.3 (7.1)	18.8 (7.3)	26.1 (7.7)	102.5	<.001
PCL:YV Total score	7.5 (5.3)	16.5 (6.9)	24.7 (6.5)	160.5	<.001
PCL:YV Factor I	1.8 (2.0)	4.9 (3.3)	7.8 (3.5)	80.6	<.001
PCL:YV Factor II	4.6 (3.4)	9.7 (3.7)	14.0 (2.9)	177.5	<.001
CAT	4.8 (2.9)	7.6 (2.8)	10.7 (2.9)	107.4	<.001

¹Note: (sd); _a represents group differences with the no ADHD diagnosis group at $p < .05$; _b represents group differences with the ADHD Inattention subtype at $p < .05$; _c represents group differences with the Hyperactivity-Impulsivity subtype. ² all groups are different at $p < .05$.

PCL:YV, and CAT scores differed significantly across the subtypes of CD. Post-hoc analyses were conducted to determine whether these subtypes could be differentiated from one another on these measures. Again, all subtypes could be differentiated from each other. In particular, the CD-LO group could be statistically differentiated from the CD-EO group based on PCL:YV ($t(405) = 11.7, p < .001$), CAT ($t(405) = 10.4, p < .001$), and the YLS/CMI total scores ($t(405) = 9.2, p < .001$). It is evident that the CD-EO subtype showed the highest levels of risk and psychopathy over either the CD-none group but also with the CD-LO subtype. Thus, as onset of CD decreases there are subsequent increases in risk ratings and psychopathy. In addition, the CD-LO subtype had significantly higher levels of risk than the CD-none group on all measures.

Disruptive Behaviour Disorder Classification. The classification scheme for Disruptive Behaviour Disorders was subjected to several ANOVAs with measures of psychopathy, risk, and needs being used as the dependent measures (see Table 23). These measures were found to be significantly different across the Disruptive Behaviour Disorder classification scheme. Contrasts were then analyzed to determine the nature of these differences. The first series of contrasts determined that the ADHD with comorbid CD type had significantly higher scores on the PCL:YV ($t(404) = 10.9, p < .001$), and its two factors scores ($t(404) = 7.9, p < .001$; $t(404) = 10.9, p < .001$) when contrasted with the remaining 3 groups. This finding was consistent with differences with the YLS/CMI total score ($t(404) = 9.5, p < .001$). As a result, the ADHD with comorbid CD was at higher risk, had higher Need Factor scores, and had higher rates of psychopathy than participants not falling inside this group.

Contrasts between the CD-EO only and ADHD/CD was examined with a specific focus on what differences in need areas these offender classifications would produce. These two groups were found to have differences across the need domains of education ($t(404) = 2.8, p <$

Table 23

ANOVAs and Group Contrasts Examining Differences in Measures of Psychopathy, Risk, and Needs Across Disruptive Behaviour Disorder Category

Criterion	<u>Disruptive Behaviour Disorder Classification</u>				<i>F</i>	<i>p</i>
	No Diagnosis (<i>n</i> = 54) ¹	CD-LO Only (<i>n</i> = 180) ²	CD-EO Only (<i>n</i> = 135) ³	ADHD /CD (<i>n</i> = 39) ⁴		
PCL:YV total score	7.2 (4.9)	16.2 (6.7)	23.8 (6.6)	27.5 (4.6)	124.3	<.001
PCL:YV Factor I	1.7 (1.8)	4.8 (3.3)	7.5 (3.5)	9.0 (2.9)	61.8	<.001
PCL:YV Factor II	4.5 (3.3)	9.5 (3.7)	13.6 (3.0)	15.3 (2.1)	132.6	<.001
CAT score	4.7 (2.8)	7.5 (2.7)	10.2 (2.9)	12.2 (2.1)	82.8	<.001
YLS/CMI total score	10.2 (7.1)	18.5 (7.2)	25.1 (8.0)	29.7 (5.3)	79.4	<.001
1. Criminal history	.90 (1.2)	2.3 (1.6)	2.8 (1.7)	3.7 (1.2)	30.9	<.001
2. Family	2.0 (1.8)	3.0 (1.7)	3.6 (1.7)	4.1 (1.5)	16.1	<.001
3. Education	2.1 (1.7)	3.3 (1.8)	4.4 (2.0)	5.4 (1.5)	35.2	<.001
4. Associates	1.3 (1.2)	2.4 (1.2)	2.8 (1.3)	3.4 (0.9)	28.5	<.001
5. Substance abuse	.92 (1.4)	2.0 (1.7)	2.2 (1.8)	2.6 (1.7)	9.2	<.001
6. Leisure/recreation	.94 (0.9)	1.7 (1.0)	2.0 (0.9)	2.2 (0.8)	19.6	<.001
7. Personality	1.1 (1.3)	2.3 (1.7)	4.2 (1.6)	4.8 (1.6)	79.2	<.001
8. Attitudes	.87 (1.1)	1.8 (1.4)	3.0 (1.5)	3.5 (1.1)	48.0	<.001

Note: (*SD*); Contrasts between (1,2,3) & 4 all significant at $p < .001$ except substance abuse Need Factor ($p < .01$); contrasts between 3 & 4 all significant at $p < .05$ except for family Need Factor (ns), substance abuse Need Factor (ns), and leisure/recreation Need Factor (ns); contrasts between 2 & (3,4) all significant at $p < .001$ except for substance abuse Need Factor ($p < .05$)

.001), personality/behavior ($t(404) = 2.0, p < .05$), and attitudes/orientation ($t(404) = 2.2, p < .05$), and peer relations ($t(404) = 2.4, p < .05$). Thus, those with ADHD comorbid with CD were more likely to experience problems in the areas of peers relations, personality/behaviour, education, and antisocial attitudes than those in the CD-EO only group. In contrast, the need domains of family problems, leisure/recreation, and substance abuse did not differentiate these groups.

The final contrast examined differences in the CD-LO only group with CD-EO only and ADHD comorbid CD group. Upon examination this group differed from the other two in all aspects of risk, psychopathy, and need domains. Thus, the late onset CD group had significantly lower YLS/CMI total scores ($t(404) = 10.4, p < .001$) and showed significantly fewer signs of psychopathy ($t(404) = 12.8, p < .001$) than a statistical combination of the other two diagnostic classifications. Further, the CD-LO only group experienced far less needs across all domains than their CD counterparts.

Past Criminal Involvement and Prediction Instruments

Many of the disruptive behaviour disorder scales have not been utilized in forensic settings. For this reason these scales, along with measures of psychopathy and risk, were subjected to various validation correlations to determine their relationships with historical measures of criminal activity. Dimensions of criminality were thought to be best understood in terms of the frequency of offending, seriousness of offending, and versatility of antisocial conduct. Frequency was judged by the number of past criminal convictions, seriousness by the number of violent offences as well as the number of previous incarcerations, and versatility based on a summation of involvement in different types of criminal conduct. Additional static criminal features that are often used as predictors of criminal reoffending were employed. These

included age at first arrest, prior record, and current violent offence. These dimensions were subjected to correlational analyses. Results are presented in Table 24.

Measures of risk and psychopathy had mostly significant moderate correlations with measures of criminal frequency and violent conviction frequency. In particular, the number of previous violent offences had a correlation with the PCL:YV Factor II score of $r = .36$ ($p < .001$). Another variable thought to reflect seriousness of past criminal conduct was the number of incarcerations. The highest correlations with this variable were the YLS/CMI ($r = .57$, $p < .01$) followed by PCL:YV ($r = .53$, $p < .001$). Therefore, as past seriousness of offending increased indicators of psychopathy and risk also increased significantly. Higher correlations were found between total convictions or frequency of any offending and measures of risk and psychopathy. Correlation coefficients ranged between $r = .39$ ($p < .001$) for Factor I of the PCL:YV and total convictions and $r = .55$ ($p < .001$) between YLS/CMI total score and total convictions. Again, as frequency of past offending increased so did measures of psychopathy and risk. The high significant correlations between criminal versatility and the YLS/CMI ($r = .67$, $p < .001$) and PCL:YV total score ($r = .74$, $p < .001$) suggests that versatility plays a large role in the determination of these measures. As one would expect given the makeup of CD criteria, the number of CD symptoms was highly correlated criminal versatility ($r = .84$, $p < .001$) making the two measures virtually synonymous.

It is evident that the YLS/CMI and PCL:YV are heavily influenced by past criminal conduct. Much of this is attributed to the items reflecting criminal history in both of the measures. However, neither of the ADHD-RS or ODD-RS scores contain references to or items designed to reflect criminal conduct. Still, both scales correlated significantly with all measures of past criminal frequency, seriousness, and versatility. The ADHD-RS total score ($r = .19$, $p <$

Table 24

Correlations Between Prediction Instruments and Criminal Behaviour Variables

	Age first arrest	Prior record	Violent index	Total convictions	Total violent	Total custody	Criminal versatility
YLS/CMI total	-.27**	.41**	.10	.55**	.32**	.57**	.67**
PCL:YV Total score	-.30**	.45**	.14*	.54**	.33**	.53**	.74**
PCL:YV Factor I	-.23**	.32**	.09	.39**	.20**	.38**	.58**
PCL:YV Factor II	-.29**	.46**	.16*	.54**	.36**	.53**	.72**
CAT	-.43**	.41**	.15*	.49**	.35**	.51**	.64**
ADHD-RS total	-.32**	.32**	.04	.40**	.20**	.38**	.51**
ADHD-RS IA	-.31**	.30**	.04	.37**	.18**	.35**	.47**
ADHD-RS HI	-.29**	.31**	.02	.37**	.19**	.37**	.47**
ODD-RS total	-.26**	.26**	.14*	.36**	.34**	.42**	.54**
CD-sym	-.32**	.42**	.13*	.55**	.34**	.53**	.84**

Note: ** significant at $p < .001$, * p is significant at $p < .05$.

.001) and subcomponents of Inattention ($r = .17, p < .001$) and Hyperactive-Impulsivity ($r = .19, p < .001$) showed modest correlation coefficients with violence. Yet the ODD-RS showed a moderate correlation with number of previous violent offences ($r = .35, p < .001$). Thus, as one becomes more oppositional the likelihood of past violence increases. The ADHD-RS was the single highest correlate with age at first arrest ($r = -.31, p < .01$). Thus, as age of first arrest decreased the total score on the ADHD-RS increased.

Need Factors and Criminal History. Correlations examining the relationships between individual Need Factors and past measures of criminal conduct were calculated. The correlation matrix presented in Table 25 shows that the Criminal History Need Factor had significant correlation coefficients with all criminal variables, with the exception of violent index offence. This is not surprising given that this factor is calculated to be an index of these variables. Of more interest are the modest to moderate correlations of all the Need Factor scores with total offences. Total past convictions correlation coefficients ranged from an $r = .26$ ($p < .001$) with the family Need Factor to an $r = .39$ ($p < .001$) with the peer relations Need Factor. Thus, as past offence frequency increased all Need Factor scores increased.

Previous frequency of violent offending showed significant correlations with all Need Factors with the exception of the substance abuse Need Factor. Thus, substance abuse needs was not related to previous violent offending in this sample. In contrast, the personality/behaviour Need Factor score ($r = .24, p < .001$) and education Need Factor score ($r = .12, p < .05$) were significantly related to a past inclination to engage in violent offences. Outside of the criminal history factor, the highest correlation coefficients with past number of incarcerations were found for peer relations ($r = .38, p < .001$), personality/behavior ($r = .38, p < .001$) and attitude/orientation ($r = .39, p < .001$) Need Factors. Thus, those who spent the most time in

Table 25

Correlations Between Need Factors and Historical Criminal Activity Variables

	Age first arrest	Prior record	Violent index	Total convictions	Total violent	Total custody	Criminal versatility
YLS/CMI total score	-.27**	.41**	.10	.54**	.32**	.57**	.67**
1. Criminal history	-.25**	.61**	.05	.73**	.28**	.70**	.67**
2. Family	-.15**	.16**	.03	.26**	.20**	.31**	.30**
3. Education	-.23**	.20**	.12*	.34**	.25**	.33**	.45**
4. Associates	-.14*	.27**	.01	.39**	.17**	.39**	.50**
5. Substance abuse	-.05	.23**	-.05	.31**	.07	.32**	.29**
6. Leisure/recreation	-.11*	.26**	.01	.33**	.17**	.35**	.42**
7. Personality	-.25**	.26**	.24**	.35**	.38**	.39**	.53**
8. Attitudes	-.23**	.27**	.04	.34**	.19**	.39**	.50**

Note: ** significant at $p < .001$, * p is significant at $p < .05$.

custody were also most likely to be identified by the YLS/CMI as having the most antisocial associates, be more aggressive/defiant, and be more antisocial in orientation.

ADHD, CD, and Criminal History. Criminal offending variables were also examined across ADHD subtypes as well as CD subtypes. These findings are presented in Table 26. As can be seen in the top half of the table, a series of one-way ANOVAs determined that there were significant group differences in all criminal variables across ADHD subtypes. Further analysis revealed that there were significant differences between the ADHD-none group and the three ADHD subtypes combined for age at first arrest ($t(404) = 5.0, p < .001$), total offences ($t(404) = 4.2, p < .01$), total incarcerations ($t(404) = 4.2, p < .001$), and criminal versatility ($t(404) = 5.0, p < .001$). Fewer differences across individual subtypes were found. One exception was with violent offences. In this instance, the total number of violent offences was significantly greater in the ADHD-both subtype than ADHD-IA ($p < .05$), ADHD-HI ($p < .05$) or ADHD-none ($p < .05$) groups. The ADHD-both subtype clearly had a significantly more extensive criminal history.

In the bottom half of the same table differences in criminal variables were explored in relation to CD subtypes. A series of one-way ANOVAs demonstrated group differences in criminal history variables across subtypes. Post-hoc analyses found that the CD-EO subtype exhibited significantly greater frequencies of offending ($t(405) = 5.1, p < .001$), greater frequencies of violent offending ($t(405) = 3.3, p < .01$), higher rates of incarceration ($t(405) = 5.3, p < .001$), was more criminally versatile ($t(405) = 7.4, p < .001$), and had an earlier age of first arrest ($t(405) = 5.9, p < .001$) than the CD-LO subtype. Similarly, the CD-LO group could be differentiated from the no CD diagnosis group by its larger number of total offences ($t(405) = 5.0, p < .001$), incarcerations ($t(405) = 4.3, p < .001$), and more criminally versatile conduct (t

Table 26

The Frequency, Seriousness and Versatility of Offending Across Diagnostic Subtypes

Criterion	ADHD Diagnostic Type ¹				<i>F</i>	<i>p</i>
	None (<i>n</i> =354)	IA (<i>n</i> =7)	HI (<i>n</i> =32)	Both (<i>n</i> =15)		
Age at first arrest	13.7 _{bcd} (1.2)	12.1 _a (3.0)	13.0 _a (1.2)	12.8 _a (1.4)	8.7	<.001
Total offences	6.7 _{cd} (5.3)	8.9 _d (6.4)	11.8 _a (7.9)	11.5 _{ab} (6.5)	11.1	.001
Total violent offences	1.2 _d (1.6)	0.7 _d (0.8)	1.4 _d (1.7)	3.1 _{abc} (3.4)	6.8	<.001
Total incarcerations	1.1 _{cd} (1.1)	1.9 (1.8)	1.8 _a (1.2)	2.1 _a (1.5)	8.2	<.001
Criminal versatility	5.1 _{cd} (2.5)	6.3 (2.6)	7.4 _a (2.1)	8.0 _a (2.0)	14.8	<.001

Criterion	CD Diagnostic Type ²			<i>F</i>	<i>p</i>
	None (<i>n</i> =55)	Late Onset (<i>n</i> =187)	Early Onset (<i>n</i> =166)		
Age at first arrest	14.1 _c (1.1)	13.9 _c (1.1)	13.1 _{ab} (1.4)	22.0	<.001
Total offences	2.6 _{bc} (2.3)	6.7 _{ac} (4.8)	9.6 _{ab} (6.5)	37.9	<.001
Total violent offences	0.8 _c (1.2)	1.1 _c (1.6)	1.7 _{ab} (1.9)	8.3	<.001
Total incarcerations	.33 _{bc} (0.7)	1.0 _{ac} (1.0)	1.7 _{ab} (1.3)	34.3	<.001
Criminal versatility	2.3 _{bc} (1.3)	5.1 _{ac} (2.0)	6.8 _{ab} (2.4)	100.4	<.001

¹ For the ADHD table: _a significant group differences with ADHD-none at $p < .05$; _b significant group differences with ADHD-IA at $p < .05$; _c significant group differences with ADHD-HI at $p < .05$; _d significant group differences with ADHD-both at $p < .05$.

² For the CD table: _a significant group differences with CD-none at $p < .05$; _b significant group differences with CD-LO at $p < .01$; _c significant group differences with CD-EO at $p < .01$.

(405) = 9.0, $p < .001$). In contrast, the CD-LO subtype did not differ significantly in the number of violent offences or the age at first arrest from the CD-none group.

Juvenile Recidivism

Juvenile Recidivism Rates. Future juvenile criminal records for all 408 participants were obtained utilizing three sources of information. Data on juvenile offending was collected on the cumulative sum of all offences on the juvenile record up until the age of 19. Thus, by definition, follow-up lasted until at least their 18th birthday. The resultant mean follow-up time for juvenile offending was 754 days ($SD = 336$) with a range from 119 days to 5.9 years. Any offences dealt with in adult court were excluded from this analysis regardless of the age of the participant at the time of its occurrence. The number of days to recidivate in any manner averaged 299 days with a range of 1 day to 4.0 years ($SD = 256$ days).

Recidivism data gathered revealed that 63% ($n = 257$) of the sample was convicted of a new criminal offence that was dealt with through Youth Court during the juvenile follow-up period. This was considered the juvenile general recidivism rate. The mean number of new juvenile offences was 2.88 ($SD = 4.0$) with a range from 0 to 28 offences. The violent recidivism rate was 23% ($n = 95$). This was considered the juvenile violent recidivism rate. The number of new violent offences ranged from 0 to 6 with a mean of 0.38 ($SD = .88$).

Forty-nine percent ($n = 199$) of the participants were given a new secure or open custodial sentence after their termination. This was considered the reincarceration recidivism rate. For those receiving a custodial sentence, the range of single longest sentences received during the remainder of the youth's adolescence ranged from 1 week to 5 ½ years ($M = 6.7$ months, $SD = 6.9$ months). Furthermore, the total time sentenced to custody during the juvenile follow-up period ranged from 1 week to 5 ½ years ($M = 8.9$ months, $SD = 8.9$). Open custody

dispositions ranged from 0 to 34 months with a mean of 4.8 months ($SD = 5.1$) while total time sentenced to secure custody ranged from 0 to 66 months with a mean of 4.2 months ($SD = 7.4$).

Simple Predictors of Juvenile Recidivism. Reoffending rates across gender are presented in Table 27. It can be seen that males had a higher frequency of general recidivism ($t(406) = 3.18, p < .01$), reincarceration ($t(406) = 3.81, p < .001$), and violent recidivism ($t(406) = 2.0, p < .05$). Males had a statistically greater amount of sentencing time during the juvenile follow-up time ($t(406) = 3.79, p < .001$) than females. Differences across SES were investigated. One-way ANOVAs failed to establish any differences across SES in rates of any type of recidivism measure. In fact, it was notable that participants coming from an upper-class background had higher rates of reincarceration and time served, although this did not reach significance levels.

A number of criminal background measures were then examined in relationship to juvenile recidivism measures. Age at first arrest was found to be significantly and negatively correlated with general recidivism ($r = -.20, p < .001$), reincarceration ($r = -.16, p < .001$), and time served ($r = -.18, p < .001$). It was not, however, significantly related to violent recidivism. Similarly, number of previous offences ($r = .26, p < .001$), number of previous violent offences ($r = .18, p < .001$), and total number of previous incarcerations ($r = .30, p < .001$), were all found to have statistically significant correlations with juvenile time served. Thus as previous offending increased in frequency and seriousness the likelihood of future reoffending and reincarceration also increased.

A strong finding was the correlation between criminal versatility and time served ($r = .38, p < .001$). This suggests that the most robust criminal history predictor for future reoffending as a juvenile is one that measures versatility and not just seriousness or frequency of offending.

Table 27

Gender Differences in Juvenile Recidivism Rates

Juvenile recidivism measure	<u>Gender</u>		Total (408)	<i>t</i>	<i>p</i>
	Male (327)	Female (81)			
Juvenile recidivism	67%	47%	63%	3.4	.001
Juvenile violent recidivism	25%	15%	23%	2.0	.044
Juvenile reincarceration	54%	28%	48%	4.2	<.001
Juvenile time served (months)	5.2	1.1	4.3	4.3	<.001

Note: (*n*)

This pattern held for both male and female offenders. Notably, the only larger correlate with future violence than criminal versatility was the number of previous violent offences ($r = .25, p < .001$).

To understand the importance of these criminal history variables across gender the sample was split and correlations were calculated for each gender. As seen in Table 28, previous violent offending did not have the same predictive capabilities in females as it did for males in this sample. Furthermore, age at first arrest showed the highest correlation coefficients with most juvenile criminal outcomes including female future violence, yet this was not a statistically significant correlate for males. In reverse, previous offending patterns such as number of previous violent offences showed a significant correlation ($r = .31, p < .001$) with violent recidivism in males but failed to be predictive for females. As with males, criminal versatility showed moderate significant correlations with most recidivism measures and was the most consistent predictor of future recidivism across genders.

Gender Specific Predictors of Juvenile Recidivism. Exploratory analyses were conducted to determine whether there were additional risk markers that were unique for each gender. A variety of family, social, academic, and behavioural variables were submitted to correlation analyses with the three recidivism measures (general, violent and reincarceration). Individual correlation coefficients that reached significance levels for one gender were then compared to the correlation coefficients for the other gender. Those identified as significant for one gender and not the other and were significantly higher were considered unique risk factors. Those listed below all met significance levels. For males, unique static markers of reincarceration included abusive father ($r = .17$ vs. $r = -.14$) and a family history of substance abuse ($r = .15$ vs. $r = -.07$). Unique static markers for violence also included abusive father ($r = .17$ vs. $r = -.10$) and a family

Table 28

Correlations for Criminal History Variables with Recidivism Across Genders

	<u>Criminal History Predictors</u>				
	Age at first arrest	Total convictions	Total violent	Total custody	Criminal versatility
<u>Male (n = 327)</u>					
Juvenile recidivism	-.16**	.16**	.19**	.13*	.28**
Juvenile reincarceration	-.11*	.25**	.23**	.23**	.34**
Juvenile violent recidivism	-.04	.07	.31**	.14**	.23**
Juvenile time served (months)	-.16**	.25**	.23**	.32**	.38**
<u>Female (n = 81)</u>					
Juvenile recidivism	-.35**	.37**	.22	.44**	.44**
Juvenile reincarceration	-.39**	.18	.06	.27*	.36**
Juvenile violent recidivism	-.34**	.02	.06	.19	.19
Juvenile time served (months)	-.38**	.14	.03	.19	.29*

Note: ** significant at $p < .001$, * p is significant at $p < .05$.

history of substance abuse ($r = .13$ vs. $r = -.16$). Dynamic factors that were unique predictors of male violent recidivism included inconsistent parenting ($r = .21$ vs. $r = -.20$), school peer problems ($r = .22$ vs. $r = -.17$), and current signs of suicidal behaviour ($r = .16$ vs. $r = -.02$). Personality features that were exclusively predictive of male reincarceration included difficulty staying on task/following instructions ($r = .21$ vs. $r = .09$) and temper ($r = .21$ vs. $r = -.02$). Temper was also a unique male predictor of violent recidivism ($r = .28$ vs. $r = .16$).

Static factors that were found to be predictive of female recidivism, while not being risk markers for males, included being a victim of physical abuse ($r = .28$ vs. $r = .07$). Having previous suicide attempts ($r = -.21$ vs. $r = .09$) was found to be a negative significant correlation with reincarceration. Therefore, those with no history of suicidal behaviours were more likely to be reincarcerated. Interestingly, current/recent suicidal ideations or behaviour was not predictive of reoffending in females, but was for males. Other unique dynamic predictors of general recidivism for females included poor organizational skills ($r = .30$ vs. $r = .09$), forgetfulness ($r = .29$ vs. $r = .08$), manipulateness ($r = .34$ vs. $r = .04$) access to alcohol/drugs ($r = .30$ vs. $r = .10$), and serious current substance abuse problems ($r = .31$ vs. $r = .07$). The same pattern for all dynamic variables held for reincarceration. These differences were not evident when examining violent recidivism.

Psychometric and Actuarial Prediction of Juvenile Recidivism.

One of the primary goals of the current research was to examine the predictive abilities of assessment measures of ADHD, disruptive behaviour disorders, psychopathy, and risk. Table 29 presents the correlations between all dimensional prediction instruments and recidivism variables whereas Table 30 presents these correlations separately for each gender. As can be seen, all of the instruments were significantly correlated with all recidivism outcome measures. The highest

Table 29

Correlation Coefficients Between Prediction Instruments and Juvenile Recidivism Measures

Prediction Instrument	<u>Juvenile Outcome</u>			
	General Recidivism	Violent Recidivism	Reincarceration	Time served
YLS/CMI total	.40	.25	.40	.36
PCL:YV total score	.41	.27	.40	.39
PCL:YV Factor I	.29	.20	.31	.33
PCL:YV Factor II	.45	.28	.41	.36
CAT	.36	.26	.34	.29
ADHD-RS total	.36	.20	.36	.28
ADHD-RS IA	.33	.18	.32	.26
ADHD-RS HI	.34	.19	.34	.26
ODD-RS total	.33	.25	.30	.30
CD-sym	.40	.27	.39	.36

Note: all are significant at $p < .001$

Table 30

Correlation Coefficients Between Prediction Instruments and Juvenile Recidivism Measures

Across Gender

Prediction Instrument	<u>Juvenile Outcome</u>			
	General Recidivism	Violent Recidivism	Reincarceration	Time served
<u>Male</u> ($n = 327$)				
YLS/CMI total	.35**	.28**	.40**	.38**
PCL:YV Total score	.36**	.29**	.37**	.40**
ADHD-RS total	.31**	.18**	.30**	.23**
ODD-RS total	.32**	.25**	.31**	.32**
CD-sym	.35**	.25**	.36**	.36**
<u>Female</u> ($n = 81$)				
YLS/CMI total	.60**	.13	.45**	.35**
PCL:YV Total score	.58**	.16	.51**	.44**
ADHD-RS total	.46**	.18	.44**	.38**
ODD-RS total	.39**	.28*	.27**	.32*
CD-sym	.54**	.31*	.45**	.37**

Note: * significant at $p < .05$; ** significant at $p < .001$

single correlate with general recidivism ($r = .45, p < .001$), violent recidivism ($r = .28, p < .001$), juvenile reincarceration ($r = .41, p < .001$), and time served ($r = .36, p < .001$) was the PCL:YV Factor II score. In contrast, the Factor I scores showed the lowest correlations with general recidivism ($r = .29, p < .001$) and reincarceration ($r = .31, p < .001$) compared with any of the other measures.

The ADHD-RS, ODD-RS and CD-sym scales all showed significant correlations with violence and the amount of time served. Of these measures the CD-sym score showed the highest correlations with general recidivism ($r = .40, p < .001$), violent recidivism ($r = .27, p < .001$), juvenile re-incarceration ($r = .39, p < .001$), and time served ($r = .36, p < .001$). In fact, in most instances correlations between the CD-sym scale were comparable in size to the YLS/CMI total score and PCL:YV total score.

Correlations for most instruments with juvenile outcome measures were significant when selecting the sample by gender. Again, for the male subsample all measures were significantly correlated with recidivism. For the females there were typically higher correlations between predictors measures and general recidivism and reincarceration outcomes compared to males. This was not the case for predicting future violence. Both the YLS/CMI and PCL:YV scores were not significantly correlated with violent recidivism. Notably, both the ODD-RS ($r = .28, p < .05$) and CD-sym ($r = .31, p < .001$) scales were the only scales to be significantly correlated with female future violence.

YLS/CMI Need Factor scores were then exposed to a correlation analysis with juvenile recidivism measures (see Table 31). The highest correlates with general recidivism were the education Need Factor ($r = .36, p < .001$) and peer relations Need Factor ($r = .35, p < .001$). In the case of re-incarceration, the antisocial/orientation ($r = .37, p < .001$) and peer relations ($r =$

Table 31

Correlations Between YLS/CMI Need Factor Scores and Juvenile Recidivism Measures

Measures	<u>Juvenile Recidivism Measure</u>			
	General Recidivism	Violent Recidivism	Reincarceration	Time served
YLS/CMI total score	.40**	.25**	.40**	.36**
1. Criminal history	.25**	.10*	.27**	.23**
2. Family	.18**	.14*	.19**	.16**
3. Education	.36**	.23**	.33**	.29**
4. Associates	.35**	.18**	.36**	.32**
5. Substance abuse	.14*	.09	.17**	.16**
6. Leisure/recreation	.27**	.15*	.28**	.25**
7. Personality	.32**	.23**	.27**	.27**
8. Attitudes	.32**	.26**	.37**	.31**

Note: * significant at $p < .05$; ** significant at $p < .001$

.36, $p < .001$) Need Factor scores were the mostly highly correlated predictors. This same trend was evident for the time served outcome criterion. In terms of violent recidivism, the antisocial/orientation ($r = .26, p < .001$) and the personality/behaviour need scores ($r = .23, p < .001$) were the highest correlates. Notably, the substance abuse Need Factor exhibited the lowest correlation coefficients with juvenile outcome measures and failed to reach significance in its correlation with future violence.

Need Factor correlations with juvenile recidivism measures were examined separately for each gender. The correlation coefficients are presented in Table 32. For the male subsample the correlations between Need Factors were consistent with the correlations for the total sample. Again, the education, peer relations, personality/behavior, and attitudes Need Factor scores showed significant correlations with all outcome measures. For the female subsample, the correlation coefficients for all Need Factors with general recidivism were significant and slightly elevated compared to their male counterparts. In contrast, no significant correlations were found between individual Need Factors and violent recidivism.

Incremental Validity of Juvenile Recidivism Prediction Instruments. To determine the unique contributions of each instrument to the explanation of juvenile outcome measures a series of step-wise multiple regression analyses were conducted. The step-wise method was utilized as an exploratory technique to provide the surest path to the best prediction equation and to eliminate variables only providing redundant information. Several dependent variables were utilized to determine generalizability and minimize overfitting or chance inclusions. Included in these analyses were all prediction instruments and their respective subscales.

As seen in Table 33, four factors showed unique contributions in explaining general recidivism for juveniles (probability to enter $< .05$). In this analysis, the PCL:YV Factor II was

Table 32

Gender Correlations Between YLS/CMI Need Factor Scores and Juvenile Recidivism Measures

Need Factors	<u>Juvenile Recidivism Measure</u>			
	General Recidivism	Violent Recidivism	Reincarceration	Time served
<u>Males (n = 327)</u>				
1. Criminal history	.20**	.10	.28**	.25**
2. Family	.18**	.20**	.19**	.18**
3. Education	.34**	.24**	.31**	.29**
4. Associates	.29**	.17**	.34**	.34**
5. Substance abuse	.11*	.09	.18**	.19**
6. Leisure/recreation	.21**	.17*	.26**	.27**
7. Personality	.30**	.24**	.27**	.27**
8. Attitudes	.28**	.28**	.35**	.32**
<u>Females (n = 81)</u>				
1. Criminal history	.45**	.09	.21	.16
2. Family	.23*	-.15	.27*	.23*
3. Education	.43**	.13	.36**	.27*
4. Associates	.60**	.18	.46**	.38**
5. Substance abuse	.31**	.09	.21	.17
6. Leisure/recreation	.52**	.06	.41**	.28*
7. Personality	.39**	.16	.23*	.16
8. Attitudes	.47**	.15	.41**	.36**

Note: * significant at $p < .05$; ** significant at $p < .001$

Table 33

Stepwise Multiple Regression Analyses Using General Recidivism, Violent Recidivism, and Re-incarceration as the Dependent Variables

Model Summary						
Step	Predictor	Multiple R	R ²	Beta	<i>t</i>	<i>p</i>
<u>General Recidivism</u>						
1.	PCL:YV II	.45	.20	.45		
2.	Need-Educ	.46	.21	.14	2.5	.011
3.	ADHD-HI	.48	.22	.13	2.4	.016
4.	Need-peer	.49	.23	.12	2.1	.039
<u>Violent Recidivism</u>						
1.	PCL:YV II	.28	.08	.28		
2.	Need-Att	.30	.09	.14	2.2	.026
<u>Re-incarceration</u>						
1.	PCL:YV II	.41	.17	.41		
2.	Need-Att	.44	.19	.19	3.5	.001
3.	ADHD-HI	.46	.21	.18	3.1	.001
<u>Time Served</u>						
1.	PCL:YV tot	.39	.15	.39		
2.	Need-peers	.41	.17	.15	2.7	.007

Note: ($p < .05$)

extracted first ($r = .45$, $R^2 = .20$, $p < .001$). The next factor extracted was the education Need Factor score of the YLS/CMI. This factor increased the Multiple R to .46 while contributing another 2% ($\beta = .14$, $p < .05$) to the explained proportion of variance. The Hyperactive-Impulsivity subscale of the ADHD-RS was the third factor extracted and added another 1% ($\beta = .13$, $p < .05$) to the total explained variance. The final extracted variable was the peer relations Need Factor. This accounted for another 1% ($\beta = .12$, $p < .05$) of variance and raised the total proportion of explained variance to 23%. All four factors contributed significantly to the explanation of variance in juvenile recidivism ($F(4, 403) = 30.9$, $p < .001$). Thus, even after the PCL:YV factor was placed into the regression equation measures of educational needs, peer relations, and hyperactivity-impulsivity added unique information. No additional Need Factors or the YLS/CMI total score contributed unique information to the explained proportion of variance.

The step-wise analyses examining violent recidivism as the dependent measure created a two-factor model that was significant ($F(2, 405) = 19.6$, $p < .001$). The first factor extracted was the PCL:YV Factor II ($r = .28$, $R^2 = .08$, $p < .001$) followed by the attitude/orientation Need Factor ($R = .30$, $R^2 = .09$, $p < .05$). No other variables entered into the regression equation. Thus, after Factor II of the PCL:YV had been held constant the attitudes/orientation Need Factor was able to account for a unique proportion of variance in juvenile violent offending.

The third step-wise regression analysis examined reincarceration as the dependent measure. The model extracted three of the same variables that were identified in the general recidivism step-wise analysis. The entire model was significantly related to reincarceration ($F(3, 404) = 36.3$, $p < .001$). In this case PCL:YV Factor II was still the first factor extracted ($r = .41$, $R^2 = .17$, $p < .001$). The second factor was the peer relations Need Factor. This added another 2% to the explained variance ($\beta = .19$, $p < .05$). The third and final factor extracted was

the ADHD-RS HI scale. Again, this added another 2% ($\beta = .18, p < .05$) to the explained proportion of variance in reincarceration rates. A similar pattern can be seen for the time served outcome variable with the exception of ADHD-HI not being extracted. Thus, both the PCL:YV Factor II score and peer relations are able to make unique contributions to the explanation of juvenile reincarceration.

Several additional stepwise analyses were conducted to determine the unique contribution of several variables to the explanation of juvenile recidivism. It was already evident from previous analyses that the PCL:YV Factor I score did not offer any unique contributions to the explanation of all juvenile outcome measures once Factor II had been taken into account. What was then explored was whether the PCL:YV Factor II scores offered unique information towards the variance in outcome measures once CD criteria could be accounted for. In examining general recidivism ($\beta = .35, p < .01$), re-incarceration ($\beta = .26, p < .001$), and violent recidivism ($\beta = .17, p < .01$) the PCL:YV was able to add significantly to the explained variance after CD-sym had been forced into the regression model. It was noted, however, that the Factor I score could not offer a unique contribution to the explanation of variance after CD had been taken into account. It was also interesting to note that the PCL:YV total score was able to contribute uniquely to the explanation of juvenile recidivism ($\beta = .20, p < .01$) and reincarceration ($\beta = .19, p < .01$) after both CD-sym and ADHD were held constant but not to juvenile violence.

Another issue of theoretical importance was whether ADHD offered unique information to the explanation of criminal outcomes after conduct disorder has already been taken into account. Three step-wise multiple regression analyses were undertaken in which the CD early onset variable was forced into the regression equation first. For both general recidivism ($\beta = .22, p = .01$) and reincarceration ($\beta = .23, p < .01$) ADHD-RS was able to contribute unique

information towards the proportion of explained variance. For general recidivism, the inclusion of ADHD-HI increased the Multiple R to .44 and added another 2% to the proportion of explained variance. Similarly, for reincarceration, the ADHD-HI variable increased the Multiple R by 3% to .40 and added significantly to the proportion of explained variance after CD-EO variable had been accounted for. When examining violent recidivism as the dependent measure the increment in the proportion of variance gained in juvenile recidivism when ADHD scales are entered after CD was not significant. Thus ADHD scores, and specifically the hyperactive-impulsivity component, can add to the prediction of future delinquency outcomes even after CD is taken into account but does not account for unique variance in future juvenile violence.

Another set of stepwise regression analyses was conducted to determine the predictive capabilities of the “Big Four” as measured by the YLS/CMI. In each of these three analyses different recidivism measures were used as dependent measure while the Need Factors of criminal history, peer relations, attitude/orientation, and personality/behaviour were forced into the regression equation of the first step. On the second step, the remainder of the Need Factors were entered. On the third step other instruments were free to enter if they contributed significantly to the explanation of the dependent measure ($p < .05$). The results of these analyses are presented in Table 34.

In each instance either a variable measuring psychopathy or a disruptive behaviour disorder was able to add incrementally to the prediction of the dependent variable. It is also noteworthy that for both reincarceration and violent recidivism that the “Next Four” Need Factor scores did not contribute unique information towards the explanation of the dependent measure.

Some exploratory step-wise regressions were completed to determine whether there were additional variables able to contribute unique information to the explanation of variance after all

Table 34

Stepwise Multiple Regression Analyses Examining the Contributions of the Big Four

Model summary						
Step	Predictor	Multiple R	R^2	R^2 Change	F Change	p
<u>General Recidivism</u>						
1.	Big 4 ¹	.42	.17	.17	21.11	<.001
2.	Next 4 ²	.44	.19	.020	2.51	.041
3.	PCL Factor II	.48	.21	.036	18.57	<.001
4.	ADHD-RS	.49	.24	.012	6.41	.012
<u>Violent Recidivism</u>						
1.	Big 4 ¹	.29	.08	.08	9.98	<.001
2.	Next 4 ²	.30	.09	.01	<1.0	ns
3.	CAT	.32	.10	.02	6.76	.010
<u>Re-incarceration</u>						
1.	Big 4 ¹	.43	.18	.18	22.44	<.001
2.	Next 4 ²	.43	.19	.01	<1.0	ns
3.	ADHD-RS	.47	.22	.03	14.54	<.001
4.	CD-sym	.48	.23	.01	5.44	.020

Note: Probability to enter ($p < .05$); ¹ Big Four are: criminal history, personality, peers, and attitude Need Factors;

² Next Four are: family, substance abuse, leisure/recreation, and education Need Factors.

ADHD, disruptive behaviour disorder, psychopathy, and risk instruments and their subcomponents had been forced into the equation. Additional variables utilized spanned across demographic measures (i.e., gender and SES), social background measures (e.g., social, family, and academic), and release information (i.e., parental support, access, planning). For each of the four recidivism measures at least 12 variables were extracted following the first step. To ensure reliability, these variables were only considered unique contributors to the explanation of recidivism if they were extracted from the regression model of at least 3 juvenile outcome measures and were not already synonymous with measures utilized in the instruments entered on the first step. Six individual variables met these criteria and were able to significantly increment the proportion of variance in juvenile recidivism after instruments were forced into the regression equation. These were: gender, having peers outside of appropriate age range, age at first violence, attitudes supportive of criminal peers, frequent absences from home, and feasibility of future plans. Only the variable measuring attitudes supportive of criminal peers added significantly to the explained variance on all four outcome measures.

Classification Schemes and Risk. Correlational analyses have shown the significant correlation coefficients of the YLS/CMI total score and PCL:YV total score with juvenile recidivism. It is important to specify the nature of the relationships between these measures and outcome when risk and psychopathy measures are presented in their categorical form. The YLS/CMI was therefore subjected to a series of one-way ANOVAs examining differences across risk categories in juvenile offending (see Table 35). Significant findings across risk categories were found for general recidivism ($F(3, 404) = 21.37, p < .001$), violent recidivism ($F(3, 404) = 7.70, p < .001$), reincarceration ($F(3, 404) = 21.77, p < .001$), and time served ($F(3, 404) = 15.24, p < .001$). These are presented graphically in Figure 1. As can be seen, there is a linear

Table 35

Recidivism Rates Across YLS/CMI Risk Categories

	<u>Risk Category</u>					
	Low	Moderate	High	Very high	<i>F</i>	<i>p</i>
Juvenile Recidivism						
<u>Total sample</u> (<i>n</i> = 408)	(49)	(178)	(162)	(19)		
General recidivism	29%	54%	79%	95%	21.6	<.001
Violent recidivism	4%	19%	31%	47%	8.6	<.001
Reincarceration	16%	37%	67%	84%	24.2	<.001
Time served (months)	.89	2.75	6.32	11.57	17.1	<.001
<u>Males</u> (<i>n</i> = 327)						
	(39)	(143)	(128)	(17)		
General recidivism	36%	61%	80%	94%	12.7	<.001
Violent recidivism	5%	20%	34%	53%	7.7	<.001
Reincarceration	21%	43%	70%	94%	18.9	<.001
Time served (months)	1.1	3.3	7.4	12.9	15.5	<.001
<u>Females</u> (<i>n</i> = 81)						
	(10)	(35)	(34)	(2)		
General recidivism	0%	29%	76%	100%	13.4	< .001
Violent recidivism	0%	11%	24%	0%	1.5	ns
Reincarceration	0%	11%	56%	0%	9.8	< .001
Time served (months)	0.0	0.5	2.3	0.0	5.4	.002

Note: (*n*)

Figure 1

YLS/CMI Risk Category and Juvenile Recidivism

trend amongst the risk levels so that as risk levels increase from low to very high there is an increase in the rates of all types of recidivism. Similar patterns are noted for both male and females with the exception of the very high risk category in females. The low number of cases in this cell (i.e., $n = 3$) prevented meaningful analyses.

The PCL:YV categories were examined in a similar fashion (see Table 36). Utilizing the high psychopathy, moderate psychopathy, and non-psychopathy group classification as the independent factor, several one-way ANOVAs were conducted to evaluate differences in recidivism across these categories. Again, it can be seen that both male and female psychopaths as a group were much more likely to reoffend, reoffend violently, and serve a disproportionate amount of time incarcerated during the follow-up period than non-psychopaths.

The disruptive behaviour classification scheme utilized earlier was examined for differences in the rates of reoffending. One-way ANOVAs found significant group differences across categories (see Table 37). Through a series of planned contrasts it was determined that the ADHD comorbid CD subtype had significantly higher rates of general recidivism ($t(404) = 5.6, p < .001$), violent recidivism ($t(404) = 2.3, p < .05$), and reincarceration ($t(404) = 6.2, p < .001$) compared to the combined means of the other three groups. Furthermore, when compared directly with the CD-EO only subtype, the ADHD comorbid CD group had significantly higher rates of reincarceration ($t(404) = 2.9, p < .01$). These patterns held constant when examining gender populations separately. Thus, the ADHD with co-occurring CD was at a significantly increased risk for recidivism than those with CD only.

Post hoc analyses examined differences between other subtypes showed that the CD-LO had significantly higher rates of recidivism than the no diagnosis group yet was still significantly lower on all recidivism measures than the CD-EO group. Thus, classification of disruptive

Table 36

Juvenile Outcome Measures Across PCL:YV Classification Categories

Juvenile recidivism	<u>Psychopathy Classification</u>			<i>F</i>	<i>p</i>
	Non- psychopaths	Moderate	Psychopaths		
<u>Total sample</u> (<i>n</i> = 408)	(199)	(166)	(43)		
General recidivism	47%	75%	91%	25.2	<.001
Violent recidivism	14%	29%	47%	14.0	<.001
Reincarceration	32%	60%	81%	27.7	<.001
Time served (months)	2.3	4.5	13.1	43.3	< .001
<u>Males</u> (<i>n</i> = 327)	(157)	(131)	(39)		
General recidivism	55%	75%	90%	12.4	<.001
Violent recidivism	15%	30%	51%	12.6	<.001
Reincarceration	39%	62%	85%	17.1	<.001
Time served (months)	2.9	5.1	14.3	36.5	< .001
<u>Females</u> (<i>n</i> = 81)	(42)	(35)	(4)		
General recidivism	19%	74%	100%	20.8	<.001
Violent recidivism	7%	26%	0%	3.1	ns
Reincarceration	5%	54%	50%	16.4	<.001
Time served (months)	0.1	2.3	1.8	10.8	< .001

Note: (*n*)

Table 37

Summary of One-way ANOVAs Comparing Juvenile Recidivism Rates Across Disruptive Behaviour Categories

	<u>Disruptive Behaviour Disorder Classification</u>				<i>F</i>	<i>p</i>
	None	Late Onset CD	Early Onset CD	ADHD - comorbid CD		
Juvenile Recidivism	(54)	(180)	(135)	(39)		
<u>Total sample (<i>n</i> = 408)</u>						
General recidivism	24%	54%	81%	95%	30.1	<.001
Violent recidivism	7%	16%	36%	36%	9.4	<.001
Reincarceration	13%	41%	63%	87%	24.9	<.001
Time served	.71	2.6	7.1	7.9	17.0	<.001
<u>Males (<i>n</i> = 327)</u>						
General recidivism	(38)	(132)	(123)	(34)		
General recidivism	29%	59%	80%	94%	18.9	<.001
Violent recidivism	7%	17%	37%	35%	7.2	<.001
Reincarceration	18%	45%	66%	85%	16.9	<.001
Time served (months)	1.0	3.2	7.7	8.4	12.5	<.001
<u>Females (<i>n</i> = 81)</u>						
General recidivism	(16)	(48)	(12)	(52)		
General recidivism	13%	42%	92%	100%	10.5	<.001
Violent recidivism	6%	13%	25%	40%	1.6	ns
Reincarceration	0%	29%	33%	100%	7.9	<.001
Time served (months)	0.0	1.2	1.0	5.0	7.5	<.001

Note: (*n*)

behaviour disorders can operate as a significant predictor of future juvenile recidivism and that the presence of ADHD comorbid CD increases the risk for future recidivism over and above that of CD alone (early or late onset).

Survival Analyses. A number of Kaplan-Meier survival analyses were conducted to compare the predictive power of the YLS/CMI, PCL:YV, the CAT, and the DBD classification scheme. This method enables the investigation of the relationship between time to reoffend in the community and risk level. Statistics are generated to assess whether the survival curves for the suggested risk categories are significantly different from one another. As is demonstrated in Table 38, participants classified at higher YLS/CMI risk levels recidivated at a significantly faster rate (Log rank $\chi^2 = 60.5, p < .001$). This outcome was consistent across prediction instrument categories. The reoffending time and rate for those classified as ADHD with comorbid CD is noteworthy as it comes more quickly and at a higher rates than either high risk or psychopathic groups. A graphic representation of each of the prediction instruments and cumulative survival percentage for general recidivism is presented in Figures 2 through 4.

Because some instruments did not have natural categories the next series of survival analyses examined various instruments by dividing their scores at the mean in order to provide two groups for further study. Thus, two survival curves were generated from each instrument and more appropriate comparisons across instruments could be made. The results are presented in Table 39. These illustrate that there are significant differences in the rates of reoffending across risk categories. A visual representation of the YLS/CMI, PCL:YV, and CAT scores (split at mean) is presented in Figure 5. From the graphic representation we can observe a wider spread from low to high risk categories on both the YLS/CMI and PCL:YV than is obtained through CAT risk categories.

Table 38

Kaplan-Meier Survival Analyses with Juvenile Recidivism

Model	Cases	Censored	%	<i>M</i>	<i>SE</i>	<i>CI</i> (95%)	Log χ^2	<i>p</i>
<u>YLS/CMI</u>							66.47(3)	<.001
Low Risk	49	35	71%	1192	101	(995, 1389)		
Moderate	178	81	46%	776	48	(661, 870)		
High	162	34	21%	423	36	(352, 494)		
Very high	19	1	5%	330	89	(186, 474)		
<u>PCL:YV</u>							59.5(2)	<.001
None	199	105	53%	909	53	(804, 1013)		
Moderate	166	42	25%	464	36	(392, 535)		
High	43	4	9%	341	63	(216, 465)		
<u>DBD</u>							80.92(3)	<.001
None	54	41	76%	1279	85	(1112, 1447)		
CD-LO	180	82	46%	725	51	(625, 825)		
CD-EO	135	26	19%	474	41	(393, 554)		
ADHD/CD	39	2	5%	258	42	(177, 340)		

Figure 2
Kaplan-Meier Survival Analysis Utilizing YLS/CMI Risk Categories

Figure 3
Kaplan-Meier Survival Analysis Utilizing PCL:YV Classification

Figure 4
Kaplan-Meier Survival Analysis Utilizing Disruptive Behaviour Disorder Classification

Table 39

Kaplan-Meier Survival Analyses Comparing Instruments Split at the Mean

Model	Risk Level	Censored	%	Log χ^2	<i>p</i>
YLS/CMI	Low Risk	110 41	54 20	61.5	<.001
PCL:YV	Low High	112 39	53 20	53.4	<.001
CAT	Low High	105 46	50 23	34.9	<.001
ADHD	Low High	114 37	55 19	55.4	<.001
ODD	Low High	102 49	49 24	22.2	<.001
CD	Low High	110 41	50 22	43.7	<.001

Figure 5

Kaplan Meier Survival Curves of Three Classification Strategies

Another method utilized in the current study for evaluating the accuracy of each instruments in predicting recidivism was ROC analysis. The first of these analyses utilized the suggested cut-off scores for YLS/CMI and PCL:YV. Also included was the DBD classification scheme. The resulting Area Under the Curve statistic (AUC) for each outcome variable can be seen in Table 40. In all cases the DBD classification scheme variable had the highest AUC value. It is noted, however, that these were not statistically differentiated from the YLS/CMI or PCL:YV.

Several analyses were also conducted comparing AUC values after reconfiguring categories and ranks of the assessment instruments. It was found that higher AUC values could be obtained by modifying the category cutoff values of the PCL:YV or YLS/CMI. In all cases the highest AUCs were found when the PCL:YV was divided into three equal categories by percentile rank while the YLS/CMI AUCs were highest while the total score was divided into quartiles. Despite the uniform finding across all juvenile recidivism measures the increases observed in AUCs were not statistically significant.

Functional Validity of the YLS/CMI

In order to test the functional validity of the YLS/CMI it is necessary to determine whether changes in scores from one time to another reflect real changes in the probability of reoffending. To assess for changes a multi-wave design is necessary. In this study, scores of the YLS/CMI were compiled both at referral and at termination from the CST program and then compared to juvenile outcome measures. Both YLS/CMI total scores and Need Factor scores were subjected to analyses.

To test whether the second wave assessment increased the predictive power beyond the original assessment a step-wise regression analyses was first performed utilizing juvenile

Table 40

ROC Analyses of Categorical Prediction Instruments with Juvenile Recidivism

	<u>General Recidivism</u>		<u>Violent Recidivism</u>		<u>Reincarceration</u>	
	AUC (CI)	SE	AUC (CI)	SE	AUC (CI)	SE
YLS/CMI	.70 (.65 - .76)	.026	.65 (.59 - .71)	.031	.71 (.66 - .76)	.026
PCL:YV	.68 (.63 - .73)	.027	.65 (.59 - .72)	.032	.67 (.62 - .72)	.027
DBD	.74 (.69 - .79)	.025	.66 (.60 - .72)	.031	.72 (.67 - .76)	.025

recidivism measures as the dependent variables with the YLS/CMI first wave total score forced into the regression model first. For general recidivism ($\beta = .45$; partial $r = .20$, $p < .001$), violent recidivism ($\beta = .31$, partial $r = .13$; $p < .001$), and reincarceration ($\beta = .48$, partial $r = .21$; $p < .001$) the second wave YLS/CMI score added significantly to the proportion of explained variance. Thus, there was a significant unique proportion of variance in juvenile recidivism explained due to the re-test scores. Similar analyses with Need Factors scores at retest showed that criminal history ($R = .26$, $p < .001$), family ($R = .19$, $p < .001$), education ($R = .37$, $p < .001$), peer relations ($R = .35$, $p < .001$), substance abuse ($R = .15$, $p < .01$), leisure/recreation ($R = .28$, $p < .001$), personality/behavior ($R = .32$, $p < .001$), and attitudes ($R = .32$, $p < .001$) all added uniquely to the explanation of general recidivism.

Additional analysis examined whether changes in YLS/CMI scores reflected actual changes in the probability of later offending. YLS/CMI risk categories were used to examine changes in the probability of offending as risk levels increased or decreased from first to second wave. From tables 41 and 42 it can be ascertained that increases in YLS/CMI total score were typically reflected in a higher likelihood of recidivism and more time in custody than would have been expected for those who remained in the same risk category. Through statistical contrasts examining variance in each cell, the group whose risk was elevated from moderate at intake to the high risk category at retest exhibited significant increases in their likelihood of recidivism ($t(398) = 2.0$, $p < .05$) from 53% to 74%. Similarly, the group who were assessed as high risk at intake on the YLS/CMI and subsequently were determined to be in the very high risk category could be seen to have an increase in general recidivism from 80% to 100% ($t(398) = 2.3$, $p < .05$) that was significant. Those assessed as low and increased to the moderate range saw their risk increase significantly ($t(398) = 2.9$, $p < .01$).

Table 41

Recidivism Measure Rates Across Intake and Termination YLS/CMI Risk Levels

<u>Intake YLS/CMI</u> General Recidivism	<u>Retest YLS/CMI Risk Level</u>				Total
	Low	Moderate	High	Very high	
Low	22% (32)	100% (3) _a	N/A	N/A	29% (35)
Moderate	41% (17)	53% (152)	74% (23) _a	N/A	55% (192)
High	N/A	57% (23) _b	80% (137)	100% _a (9)	78% (169)
Very high	N/A	N/A	100% (2)	90% (10)	92% (12)
Total	29% (49)	54% (178)	79% (162)	95% (19)	63% (408)
<u>Violent Recidivism</u>					
Low	6% (32)	67% (3) _a	N/A	N/A	11% (35)
Moderate	0% (17)	18% (152)	26% (23)	N/A	17% (192)
High	N/A	17% (23)	32% (137)	44% (9)	31% (169)
Very high	N/A	N/A	50% (2)	50% (10)	50% (12)
Total	4% (49)	19% (178)	31% (162)	47% (19)	23% (408)
<u>Reincarceration</u>					
Low	16% (32)	67% (3)	N/A	N/A	20% (35)
Moderate	18% (17)	35% (152)	65% (23) _a	N/A	37% (192)
High	N/A	48% (23) _b	67% (137)	100% (9)	66% (169)
Very high	N/A	N/A	100% (2)	70% (10)	75% (12)
Total	16% (49)	37% (178)	67% (162)	84% (19)	49% (408)

Note: _a represents a significant increase in risk from intake assessment at $p < .05$; _b represents a significant decrease in risk from intake risk level at $p < .05$

Table 42

Juvenile Time Served Across Intake and Termination YLS/CMI Risk Levels

<u>Intake YLS/CMI</u>	<u>Retest YLS/CMI Risk Level</u>				Total
	Low	Moderate	High	Very high	
Time served (months)					
Low	.55 (32)	1.37 (3)	N/A	N/A	.62 (35)
Moderate	1.53 (17)	2.55 (152)	5.45 _a (23)	N/A	2.81 (192)
High	N/A	4.22 (23)	6.41 (137)	10.08 _a (8)	7.49 (169)
Very high	N/A	N/A	10.50 (2)	12.9 (10)	11.54 (12)
Total	.89 (49)	2.75 (178)	6.32 (162)	11.57 (19)	4.36 (408)

Note: _a represents a significant increase in risk from intake assessment at $p < .05$; _b represents a significant decrease in risk from intake risk level at $p < .05$

Small sample sizes hampered meaningful analyses, although trends could be seen in most cases in the expected direction. Thus as risk levels increased from intake to termination, recidivism rates typically increased while decreases in risk level from intake to termination showed decreases in recidivism rates. The total time served for juvenile recidivism measure was used in this exercise. Clear increases and decreases in the amount of future time sentenced to incarceration corresponded to increases or decreases in assessed risk, respectively. These differences did not typically achieve statistical significance. This lack of significance appeared to be due to a lack of power due to small numbers in each cell rather than the magnitude of mean differences in recidivism measures.

An examination of the dynamic nature of the Need Factors of the YLS/CMI was undertaken. As shown in Table 43, participants were grouped into low, moderate, and high need categories based on their Need Factor scores. Observed scores revealed that change across Need Factor levels is uncommon and occurred in less than a quarter of the cases for all Need factors. A two factor level decrease (i.e., high to low risk) is even more unlikely.

Although taken as a static factor the criminal history factor from the YLS/CMI showed changes from intake to retest. Of the 77 participants whose factor score on this subcomponent changed from intake to retest, only one was accounted for by a decrease in factor level. Those that moved up from low risk on the criminal history Need Factor to a moderate risk ($t(401) = 3.1, p < .001$) or to high risk ($t(401) = 2.5, p < .05$) saw a significant increase in their probability of juvenile recidivism. Similarly, an increase from moderate risk to high risk on this factor brought about a 17% increase in the probability of recidivism that was also significant, $t(401) = 2.0, p < .05$. There was no evidence that decreases on this factor were related to decreases in probabilities of reoffending.

Table 43

Juvenile General Recidivism Across Intake and Termination Individual Need Factor Levels

		Retest Need Level			
Intake Factor	Level of Need	Low	Moderate	High	Overall
Criminal history	Low	39% (89)	75% (20)	86% (7)	48% (116)
	Moderate	0% (1)	60% (89)	72% (50)	64% (140)
	High	N/A	N/A	74% (152)	74% (152)
	Overall	39% (90)	62% (109)	74% (209)	63% (408)
Family circumstances	Low	56% (126)	100% (6)	N/A	57% (132)
	Moderate	37% (19)	59% (138)	75% (8)	58% (165)
	High	0% (1)	89% (9)	76% (102)	77% (111)
	Overall	53% (145)	63% (153)	76% (110)	63% (408)
Education	Low	21% (14)	100% (1)	100% (1)	31% (16)
	Moderate	45% (11)	45% (107)	53% (19)	47% (137)
	High	33% (6)	50% (48)	81% (201)	74% (255)
	Overall	32% (31)	47% (156)	79% (221)	63% (408)
Peer relations	Low	36% (66)	80% (15)	100% (2)	46% (83)
	Moderate	40% (25)	61% (146)	70% (23)	59% (194)
	High	20% (5)	91% (11)	81% (115)	79% (131)
	Overall	36% (96)	65% (172)	79% (140)	63% (408)
Substance abuse	Low	51% (88)	57% (14)	100% (2)	53% (104)
	Moderate	100% (4)	63% (147)	60% (15)	64% (166)
	High	N/A	53% (17)	72% (121)	70% (138)
	Overall	53% (92)	62% (178)	71% (138)	63% (408)
Leisure/recreation	Low	35% (40)	60% (5)	0% (1)	37% (46)
	Moderate	50% (12)	54% (67)	71% (17)	56% (94)
	High	25% (8)	54% (28)	73% (230)	70% (266)
	Overall	37% (60)	54% (100)	73% (248)	63% (408)
Personality/behaviour	Low	34% (38)	100% (1)	N/A	36% (39)
	Moderate	27% (22)	61% (208)	67% (30)	59% (260)
	High	N/A	73% (22)	85% (87)	83% (109)
	Overall	32% (60)	62% (231)	80% (117)	63% (408)
Attitudes/orientation	Low	34% (71)	83% (6)	N/A	38% (77)
	Moderate	40% (5)	62% (211)	81% (27)	63% (243)
	High	N/A	82% (11)	84% (77)	84% (88)
	Overall	34% (76)	63% (228)	84% (104)	63% (408)

The next step was to examine those Need Factors that are typically referred to as dynamic. The first to be explored was the family circumstances Need Factor. On this factor 46 cases (11%) saw a change in need level from intake to retest. Changes from low to moderate need level from intake to retest were significantly related to increases in the probability to reoffend, $t(401) = 2.3, p < .05$, while the opposite was true for decreases from moderate need to low need, $t(401) = 2.0, p < .05$. However, increases from moderate to high and decreases from high to moderate were not found to be statistically related to the probability of reoffending. Thus, on this need factor changes were not always related to changes in the probability of reoffending.

The education Need Factor level changed in roughly 21% of the cases. Participants showing a decrease in need level were almost 3 times more likely than participants with an increase. It was demonstrated that those exhibiting a decrease on this Need Factor from the high to moderate categories had a corresponding 31% decrease in the probability of reoffending, while changing from high to low on this factor had a corresponding decrease of 48% in reoffending. These both proved to be significant, $t(399) = 2.6, p < .001$ and $t(399) = 4.3, p < .001$, respectively. However, no other changes in the education Need level was able to meet significance levels.

Changes in need level were then explored for the peer relations Need Factor. Almost 20% of the cases saw a change in their Need level with an approximately even split between those increasing and those decreasing over time. Upward changes in this dynamic variable from a low need level signified an increase in the probability of reoffending, including low need to moderate need ($t(399) = 3.4, p < .01$) and low need to high need ($t(399) = 2.0, p < .05$). Changes from moderate to high did not reach significance levels. More importantly, decreases in peer relations

need level signified a decrease in risk. When examining high need participants that reduced to low need over time ($t(399) = 2.9, p < .01$) and moderate need to low need over time ($t(399) = 2.1, p < .05$) there was a corresponding decrease in recidivism that proved to be significant. Thus, changes in the peer relations Need Factor reflected real changes in the future probability of reoffending.

Although potentially dynamic the substance abuse Need Factor showed little change over time. Only 13% of the cases experienced a change in this need level over time with increases in risk for this factor being more probable (1.5:1). Nonetheless, changes from the high need substance abuser to the moderate need substance abuser saw a decrease in the probability of offending of nearly 19%. This failed to reach statistical significance. There was little evidence that increases or decreases in the substance abuse Need Factor altered future risk significantly.

The leisure/recreation Need Factor level changed in 17% of the cases. Decreases occurred at a 2 to 1 ratio. Increases in need level on this factor did not significantly alter the probability of reoffending. In contrast, decreases from the high need to the moderate need level showed a drop in reoffending of almost 19% ($t(399) = 2.1, p < .05$) while a drop to the low risk need level represented a 48% decrease in reoffending ($t(399) = 2.9, p < .001$). Increases from moderate to high did not reach statistical significance.

Almost 18% of the cases showed changes in their personality/behaviour score with a roughly even split of those increasing and decreasing. However, the only significant change in reoffending occurred if the need level decreased from moderate to low ($t(401) = 3.3, p < .01$). There were no significant differences in reoffending rates when the personality/behaviour need level increased over time.

The attitude/orientation need level only changed in 12% of the cases, the second lowest of any of the dynamic need factors. Still, all increases in need level brought about a significant increase in the probability of reoffending. As offenders moved from low need to moderate need on the attitudes component, their risk for reoffending more than doubled ($t(404) = 2.6, p < .01$). An increase from moderate need level for attitudes to high need signified a 19% increase in reoffending, $t(404) = 2.1, p < .05$. Although trends suggest that a decrease in this need factor may bring about decreased levels of reoffending, this trend was not statistically significant.

Overall, decreases in Need Factor level typically represented decreases in the risk for future criminal offending while increases in Need Factor level corresponded to increases in future recidivism. Notably, some Need Factors proved to be more malleable than others. These findings were consistent across general recidivism, reincarceration, and time served measures. Overall, changes in Need Factors were less predictive of future violent offending.

Adult Follow-up

The next phase of the analyses was to explore the relationships between predictor instruments and adult outcome measures of recidivism. Outcome data was gathered at two separate points in time. The first was an adult follow-up that examined the adult criminal record for those participants who were at least 20 years of age by follow-up. Second, a federal sentence outcome measure was extracted based on individuals having had a minimum of 4 years to incur a federal sentence (over two year). Individuals meeting both criteria were extracted from the total sample and comprise the adult follow-up sub-sample for the adult recidivism analyses. In total, 334 participants met these criteria for adult follow-up. A similar ratio of males ($n = 270$) to females ($n = 64$) was found in this sample compared to the overall sample.

The resultant mean follow-up times for the adult follow-up was 4.16 years ($SD = 1.54$) with a range from 218 days to 7.5 years. The mean follow-up for coding federal recidivism was 8.9 years ($SD = 1.7$). Data on adult offending was collected based on the cumulative sum of all offences during the follow-up time period while federal recidivism was calculated based on whether the participant had ever incurred a federal sentence during this follow-up time. Any offences occurring in juvenile court were excluded from adult follow-up analyses, regardless of age.

Recidivism data gathered revealed that 43% ($n = 144$) of the sample had incurred a criminal conviction in an adult court during the follow-up period. This was considered the adult general recidivism rate. The mean number of new adult offences was 2.7 ($SD = 4.9$ with a range from 0 to 30 offences. Nineteen percent ($n = 64$) of this sample incurred an adult violent conviction. This was considered the adult violent recidivism rate. The number of new violent offences ranged from 0 to 6 with a mean of 0.32 ($SD = .77$).

Thirty-two percent ($n = 108$) of the participants were given an adult custodial sentence after their termination. This was considered the adult reincarceration recidivism rate. The mean time sentenced for the entire adult follow up sample was 5.1 months ($SD = 12.2$) with a range from 0 days to 6 years. The most common crimes as an adult were property offences. These were committed by 33% of the sample ($n = 190$). Violent offences such as homicide, serious assaults, assaults, and robberies were committed by 1% ($n = 2$), 5.4% ($n = 18$), 13% ($n = 42$), and 5.1% ($n = 17$) of the participants during the adult follow-up, respectively. The mean rate for federal incarceration was .16 ($SD = .36$). When considering the entire sample it was noteworthy that 75% ($n = 250$) committed at least one additional offence during either the juvenile or adult follow-up period.

Reoffending rates across gender are presented in Table 44. It can be seen that males had a higher frequency of adult general recidivism, ($t(332) = 6.1, p < .001$), violent offending ($t(332) = 2.9, p < .01$) and reincarceration ($t(332) = 5.5, p < .001$) than their female counterparts. Males were also sentenced to a significantly greater amount of time ($t(332) = 3.0, p < .01$) and were more than 3 times as likely to have incurred a federal sentence at some point in time ($t(332) = 2.7, p < .01$). Differences across SES were also tested. One-way ANOVAs established significant differences across the 4 SES groups in their general recidivism ($F(3, 330) = 3.0, p < .05$), reincarceration ($F(3, 330) = 4.6, p < .01$), and federal incarceration rates ($F(3, 330) = 4.7, p < .01$). However, this pattern was not linear. For general recidivism and reincarceration the upper class category had the highest rates of recidivism followed by the poorest and then the middle classes. There were no group differences in violent recidivism across social class variables. The poorest classes were found to not have significantly higher federal incarceration rates through post-hoc analyses of group means.

Predicting Adult Reoffending. The instruments of childhood disorders as well as psychopathy and risk/needs have only been examined against juvenile outcomes thus far. A primary objective of the current study was to evaluate the ability of these instruments to predict long-term outcomes in criminal offending. Table 45 presents the correlations between all dimensional instruments and adult recidivism outcomes.

As can be seen, all of the instruments were significantly correlated with all adult outcome measures. The predictor with the highest correlation with general recidivism ($r = .39, p < .001$) violent recidivism ($r = .30, p < .001$) reincarceration ($r = .47, p < .001$), and total time incarcerated as an adult ($r = .34, p < .001$) was the ADHD-RS total score. Notably, the two

Table 44

T-Tests Examining the Differences in Adult Recidivism Across Gender

Adult Recidivism Measure	<u>Gender</u>		Total (334)	<i>t</i>	<i>p</i>
	Male (270)	Female (64)			
Adult general recidivism	51%	11%	43%	6.1	< .001
Adult violent recidivism	22%	6%	19%	2.9	.003
Adult reincarceration	39%	5%	32%	5.5	< .001
Adult time served (months)	6.1	1.1	5.1	3.0	.003
Federal sentence	18%	5%	16%	2.7	.007

Note: (*n*)

Table 45

Correlation Coefficients Between Prediction Instruments and Adult Recidivism Measures

Prediction Instrument	<u>Adult Outcome</u>				
	General Recidivism	Violent Recidivism	Incarceration	Time served	Federal Sentence
YLS/CMI total	.29	.22	.35	.30	.33
PCL:YV Total score	.35	.30	.37	.26	.32
PCL:YV Factor I	.32	.28	.33	.25	.26
PCL:YV Factor II	.34	.27	.36	.24	.31
CAT	.31	.21	.37	.28	.25
ADHD-RS total	.39	.30	.47	.34	.30
ADHD-RS IA	.38	.30	.45	.32	.30
ADHD-RS HI	.35	.27	.42	.31	.25
ODD-RS total	.25	.22	.33	.21	.24
CD-sym	.33	.26	.36	.25	.29

Note: all are significant at $p < .001$

components of ADHD were moderately and significantly correlated with all adult outcome variables. Thus, as scores increased for hyperactivity-impulsivity and inattention, the likelihood of adult offending increased. The highest correlate with federal incarceration was the YLS/CMI total score ($r = .31, p < .01$), followed closely by the PCL:YV total ($r = .31, p < .01$) and Factor II scores ($r = .30, p < .01$). The lowest correlate with all measures, with the exception of federal reincarceration, was the ODD-RS scale. The CAT scale performed comparably to all other measures, as did the disruptive behaviour disorder scales. In fact, in many instances correlations between the CD-sym scale and recidivism compared favourably in size to the YLS/CMI total score and PCL:YV score correlations.

YLS/CMI Need Factor scores were then exposed to a correlation analyses with adult recidivism measures (see Table 46). As was the case with juvenile recidivism, the highest correlate with adult general recidivism was the education Need Factor ($r = .26, p < .001$). In the case of adult incarceration, the personality/behaviour ($r = .28, p < .001$), antisocial/orientation ($r = .29, p < .001$) and education ($r = .26, p < .001$) Need Factor scores were the mostly highly correlated predictors with outcome. This same trend was evident for the time served outcome criterion.

In terms of violent recidivism, the antisocial/orientation ($r = .22, p < .001$) and the personality/behaviour Need Factor scores ($r = .22, p < .001$) were again the best predictors. This mirrors the earlier findings with juvenile violence as the outcome measure, albeit with smaller correlation coefficients. Notably, the substance abuse Need Factor scores were the poorest predictors of juvenile outcome measures and were not significantly correlated to adult violence. Perhaps of most interest are the significant correlations between all of these Need Factors with the federal incarceration outcome. In particular, the highest correlation between the Need

Table 46

Correlations Between YLS/CMI Scores and Adult Recidivism

YLS/CMI subcomponent	<u>Adult Outcome</u>			
	General Recidivism	Violent Recidivism	Incarceration	Federal
1. Criminal history	.21**	.17*	.22**	.21**
2. Family	.11	.09	.16*	.17*
3. Education	.26**	.14*	.28**	.26**
4. Associates	.21**	.20*	.24**	.23*
5. Substance abuse	.14*	.05	.18**	.17*
6. Leisure/recreation	.21**	.13*	.24**	.20**
7. Personality	.23**	.22**	.31**	.28**
8. Attitudes	.23**	.22**	.28**	.29**

Note: * significant at $p < .05$; ** $p < .001$

Factors and federal incarceration was the attitude/orientation factor ($r = .29, p < .001$). Thus, it is evident that a number of Need Factors are predictive of future adult offending over the long-term so that as Need Factors increase during adolescence there is a corresponding increase in serious adult criminal activity.

Gender Specific Markers of Adult Recidivism. Exploratory analyses were done on a variety of individual predictors of recidivism to determine gender specific risk markers. Similar to the juvenile analyses, all predictors were subjected to correlational analyses. Predictors were considered gender specific if they were statistically correlated with an outcome measure while they were not for the opposite gender and were significantly higher correlation coefficients. In this analyses several gender specific risk factors were identified. For males, often away from home ($r = .18$ vs. $.07$) was uniquely predictive of violence. Frequent address changes ($r = .31$ vs. $r = -.04$), attempted suicide ($r = .15$ vs. $r = .02$), poor parental control ($r = .25$ vs. $r = .11$), and substance abuse ($r = .24$ vs. $r = .05$) were predictive of measures of adult reincarceration for males, but not females, respectively. There were no unique risk factors for male's likelihood of being federally incarcerated.

In reverse, family marital conflict ($r = .23$ vs. $r = .06$), abusive father ($r = .17$ vs. $r = .03$), uncooperative parents ($r = .35$ vs. $r = .01$), victim of abuse ($r = .20$ vs. $r = .09$), and parasitic lifestyle ($r = .41$ vs. $r = .01$) were predictive of adult incarceration for females, but not males, respectively. All of the above factors were also unique for females in predicting violence and federal incarceration time. In this sense, for example, as family marital breakdown increased the effect was a corresponding increase in female recidivism measures, while no corresponding change in male recidivism was apparent.

Stepwise Multiple Regression Model of Adult Outcome. To determine the unique contributions of each instrument to the explanation of adult outcome a series of step-wise multiple regression analyses were conducted. Included in this analysis were the ADHD-RS and other disruptive behaviour disorder scale scores, the PCL:YV and its two factor scores, the CAT scale score, and the YLS/CMI total and subcomponent scores.

As seen in Table 47, four factors showed a unique contribution in explaining general recidivism for adults (probability to enter $< .05$). In this first analysis the ADHD-RS total score was extracted first ($r = .39, R^2 = .15, p < .001$). The next factor extracted was the Factor I score of the PCL:YV. This factor increased the Multiple R to .42 while incrementing the proportion of variance 3%. The personality/behaviour Need Factor score was extracted next. It increased the Multiple R to .43 and added an additional 1% to the proportion of explained variance. The last factor extracted was the PCL:YV Factor II score. It added another 1% to the explained proportion of variance and increased the Multiple R to .44. Together, all four factors contributed significantly and uniquely to adult general recidivism ($F(4, 329) = 19.9, p < .001$). No other measures contributed unique information after these four variables had been entered into the regression equation.

The step-wise analyses examining violent recidivism as the dependent measure created a 2-factor model that was significant ($F(2, 331) = 20.6, p < .001$). The first factor extracted was again the ADHD-RS total score ($r = .30, R^2 = .09, p < .001$) followed by the Factor I score of the PCL:YV ($R = .31, R^2 = .09, p < .05$). The Factor I score standardized Beta coefficient was significant at .16. No additional factors were extracted. Thus, the PCL:YV Factor I score added significant incremental variance in the explanation of adult violence after the ADHD-RS had

Table 47

Stepwise Multiple Regression Analyses Using Adult Outcome as the Dependent Measure.

Step	Model Summary					
	Predictor	Multiple R	R ²	Beta	<i>t</i>	<i>p</i>
<u>General Recidivism</u>						
1.	ADHD-RS	.39	.15	.39		
2.	PCL:YV I	.42	.17	.16	2.71	.007
3.	Need - Per.	.43	.18	.15	2.02	.044
4.	PCL:YV II	.44	.19	.18	2.31	.022
<u>Violent Recidivism</u>						
1.	ADHD-RS	.30	.09	.30		
2.	PCL:YV I	.33	.11	.16	2.70	.007
<u>Reincarceration</u>						
1.	ADHD-RS	.47	.22	.47		
2.	YLS/CMI	.49	.23	.14	2.37	.018
<u>Federal Incarceration</u>						
1.	YLS/CMI	.33	.11	.33		
2.	ADHD - Att	.37	.13	.18	2.97	.003

Note: Probability to enter ($p < .05$)

been held constant. No other factors accounted for a significant amount of unique variance in future adult violence.

The third step-wise regression analysis examined adult incarceration as the dependent measure. The model extracted ADHD-RS on the first step followed by the YLS/CMI total score on the second and final step. The entire model was significantly predictive of reincarceration ($F(2, 331) = 496.3, p < .001$). In this case, the ADHD-RS ($r = .47, R^2 = .220, p < .001$) made a sizable contribution to the explained proportion of variance. The second factor added another 1% to the proportion of explained variance ($\beta = .14, p < .05$).

The final step-wise regression analysis examined federal incarceration as the dependent measure. In this model the YLS/CMI was the first factor extracted. It alone contributed to 10% of the explained variance in adult federal sentences. The second factor extracted was the ADHD-RS Inattention subcomponent. This factor contributed another 2% to the proportion of explained variance and increased the multiple R to .37. Together the model was a significant predictor of future federal incarceration ($F(2, 331) = 25.5, p < .001$). From the first set of stepwise analyses it has become evident that the ADHD-RS instrument offers strong and unique contributions to the explanation of variance in adult criminal offending.

Another set of stepwise regression analyses was conducted to determine the predictive capabilities of the “Big Four” with adult recidivism. A process akin to that utilized with juvenile outcome data was employed. Results are presented in Table 48. Again, in each instance, either a variable measuring ADHD or psychopathy was able to add incrementally to the prediction of the dependent variable after the Big Four had been accounted for. With adult outcome data the ADHD scale added incrementally in every instance to the “Big Four” while the Next Four failed to do so.

Table 48

Stepwise Multiple Regression Analyses Examining the Contributions of the Big Four in
Explaining Adult Recidivism

Model Summary						
Step	Predictor	Multiple R	R^2	R^2 Change	F Change	p
<u>General Adult Recidivism</u>						
1.	Big 4 ¹	.30	.09	.092	10.12	<.001
2.	Next 4 ²	.33	.11	.014	1.61	ns
3.	ADHD-RS	.43	.19	.079	38.57	<.001
4.	PCL:YV	.45	.20	.017	8.49	<.004
<u>Adult Violent</u>						
1.	Big 4 ¹	.26	.07	.07	7.33	<.001
2.	Next 4 ²	.27	.07	.00	< 1.0	ns
3.	ADHD-RS	.33	.11	.04	18.36	<.001
4.	PCL:YV	.35	.12	.01	5.30	.022
<u>Adult incarceration</u>						
1.	Big 4 ¹	.35	.12	.12	13.58	<.001
2.	Next 4 ²	.37	.14	.02	2.03	ns
3.	ADHD-RS	.49	.24	.10	41.4	<.001
4.	CD-sym	.50	.25	.02	7.68	<.006
<u>Federal Incarceration</u>						
1.	Big 4 ¹	.32	.10	.10	11.63	<.001
2.	Next 4 ²	.34	.12	.01	1.34	ns
3.	ADHD-RS	.36	.13	.02	7.27	.007

Note: Probability to enter ($p < .05$); ¹Big Four are: criminal history, personality, peers, and attitude Need Factors;
²Next Four are: family, substance abuse, leisure/recreation, and education Need Factors.

Several additional stepwise analyses were conducted to determine the unique contributions of several variables to the explanation of adult outcome measures. Specific focus was again on the ability of the measures of psychopathy and CD to distinguish themselves as unique contributors to adult outcome measures. In the first set of analyses, both Factor I and Factor II scores of the PCL:YV were subjected to step-wise multiple regression analyses. For both adult general recidivism ($\beta = .17, p < .05$) and incarceration ($\beta = .16, p < .05$) the Factor I score accounted for a significant increase in the proportion of variance after the Factor II score had been held constant. Furthermore, for adult violence Factor I entered first but Factor II was still able to contribute uniquely to the variance in violence after Factor I has been statistically controlled ($\beta = .15, p < .05$).

The purpose of the second set of step-wise regression analyses was to determine whether the PCL:YV was able to offer any unique contributions to the explanation of variance for adult recidivism measures after both the CAT and CD had been accounted for. Thus, both the CAT and CD-sym variables were forced into the regression equation first. Factors could only be extracted if they met the $p < .05$ criteria. It was found that the Factor I score of the PCL:YV was able to account for significant proportions of variance in adult general recidivism measure ($\beta = .18, p < .01$), violent recidivism ($\beta = .19, p < .01$), and adult reincarceration ($\beta = .15, p < .05$) when the effect of CD-sym and CAT is controlled. For federal incarceration the Factor II score was able to enter the regression equation ($\beta = .19, p < .01$) after the CAT and CD-sym had been accounted for. These analyses point to the unique contributions that the PCL:YV can make to the explanation of adult recidivism measures after CD diagnostic criteria or CAT scale score have been held constant. However, the PCL:YV scores failed to contribute to the explanation of all adult recidivism measures once both CD and ADHD measures were held constant.

Categorical Analyses of Adult Risk. Correlational analyses have shown the significant correlation coefficients of the YLS/CMI and PCL:YV with adult recidivism. As with the juvenile outcome variables, it is important to specify the nature of the relationships between these measures and outcome when risk and psychopathy measures are presented in their categorical form. The YLS/CMI was therefore subjected to a series of one-way ANOVAs examining differences across risk categories in adult outcomes (see Table 49). Significant findings across risk categories were found for adult general recidivism ($F(3,330) = 11.1, p < .001$), violent recidivism ($F(3, 330) = 4.1, p < .001$), reincarceration ($F(3, 330) = 14.7, p < .001$), federal incarceration ($F(3, 330) = 17.9, p < .001$) and time served ($F(3, 330) = 11.8, p < .001$). As can be seen, there is a linear trend amongst the risk levels so that as risk levels increase from low to very high there is an increase in the rates of all types of adult recidivism.

The PCL:YV categories were examined in a similar fashion (see Table 50). Utilizing the high psychopathy, moderate psychopathy, and non-psychopathy groups as the independent factor, several one-way ANOVAs were conducted to evaluate differences in adult recidivism across these categories. Again, it can be seen that psychopaths as a group were much more likely to reoffend as an adult, reoffend violently as an adult, and serve a disproportionate amount of time incarcerated during the adult follow-up time than non-psychopaths. It is evident that the high psychopathy group had a more serious criminal future than the moderate or non-psychopathy groups. Specifically, the high psychopathy group was far more likely to incur a federal sentence as an adult.

The disruptive behaviour classification scheme utilized earlier was also examined for differences in the rates of adult reoffending across these categories (see Table 51). One-way ANOVAs found significant group differences across categories. A clear trend emerged in adult

Table 49

Adult Recidivism Rates Across YLS/CMI Risk Category

	<u>Risk Category</u>					
	Low (36)	Moderate (141)	High (139)	Very high (18)	<i>F</i>	<i>p</i>
<u>Adult outcome</u>						
General recidivism	19%	35%	51%	89%	11.1	<.001
Violent recidivism	8%	14%	24%	39%	4.1	.007
Reincarceration	3%	24%	43%	72%	14.7	< .001
Time served (months)	.17	2.5	8.4	13.0	11.8	< .001
Federal Incarceration	3%	5%	24%	56%	17.9	< .001

Table 50

Adult Outcome Measures Across PCL:YV Classification Categories

	<u>Psychopathy Classification</u>				
	Non- psychopaths (158)	Moderate (137)	Psychopaths (39)	<i>F</i>	<i>p</i>
<u>Adult outcome</u>					
General recidivism	29%	50%	74%	17.0	<.001
Violent recidivism	11%	23%	41%	10.7	<.001
Reincarceration	19%	39%	62%	17.1	<.001
Time served	3.0	6.0	11.0	7.7	<.001
Federal incarceration	7%	18%	44%	18.0	<.001

Table 51

Adult Recidivism Rates Across Disruptive Behaviour Disorder Classification

	<u>Disruptive Behaviour Disorder Classification</u>					
	None	Late Onset	Early	ADHD -	<i>F</i>	<i>p</i>
	(38)	CD (149)	Onset CD (112)	comorbid CD (35)		
<u>Adult outcome</u>						
General recidivism	16%	32%	57%	74%	15.7	<.001
Violent recidivism	5%	13%	26%	37%	6.4	.007
Reincarceration	5%	21%	44%	71%	20.2	< .001
Time served (months)	1.3	3.1	6.2	14.7	11.0	< .001
Federal incarceration	5%	7%	22%	40%	11.0	< .001

recidivism outcome across the disruptive behaviour disorder categories. For all measures the non-diagnosis category had the lowest rates of recidivism. The CD-LO only, in turn had higher recidivism rates but significantly lower in all instances with the CD-EO only group. In turn, the ADHD comorbid with CD had the highest rates of adult incarceration and federal incarceration. Again, the presence of ADHD in combination with CD placed those at a statistically increased risk for adult incarceration ($t(330) = 3.3, p < .01$) and federal incarceration ($t(330) = 2.6, p < .01$) over those with CD alone.

Survival Analyses. A number of Kaplan-Meier survival analyses were then conducted to determine the predictive power of the YLS/CMI, PCL:YV, and the DBD classification schemes to predict adult offending survival times. A graphic representation of each instrument across adult general recidivism is presented in Figures 6 through 8. As is demonstrated in Table 52 and Table 53, participants classified at higher YLS/CMI risk levels committed an adult offence at a significantly faster rate (Log rank $\chi^2 = 23.4, p < .001$) and are incarcerated more quickly (Log rank $\chi^2 = 30.1, p < .001$). This outcome was consistent for both the PCL:YV psychopathy classification and DBD classification scheme. Thus, offenders classified as high risk, psychopaths, or ADHD with comorbid CD failed at a significantly faster rate than their respective counterparts.

Another method utilized in the current study for evaluating the accuracy of each instruments in predicting recidivism was ROC analysis. The current analyses utilized the suggested cut-off scores for the YLS/CMI and PCL:YV and utilized the disruptive behaviour disorder classification. The resulting Area Under the Curve statistic (AUC) for each outcome variable can be seen in Table 54. In all cases of adult reoffending the DBD classification scheme variable had the highest AUC value, with the exception of when predicting federal incarceration

Figure 6
Kaplan-Meier Adult Outcome Survival Analysis Utilizing YLS/CMI Risk Categories

Figure 7

Kaplan-Meier Adult Outcome Survival Analysis Utilizing PCL:YV Classification

Figure 8

Kaplan-Meier Adult Outcome Survival Analysis Utilizing Disruptive Behaviour Disorder Classification

Table 52

Comparison of Instruments using Kaplan-Meier Survival Analyses for Adult General Recidivism

	Cases	Censored	%	<i>M</i>	<i>SE</i>	<i>CI</i> (95%)	Log χ^2	<i>p</i>
Model								
YLS/CMI							23.44(3)	<.001
Low Risk	36	29	81%	2252	144	(1969, 2535)		
Moderate	141	91	65%	1883	87	(1712, 2054)		
High	139	68	49%	1579	81	(1421, 1738)		
Very high	18	2	11%	1287	140	(929, 1453)		
PCL:YV							21.03(2)	<.001
None	158	112	71%	2039	81	(1880, 2198)		
Moderate	137	68	50%	1610	81	(1451, 1769)		
High	39	10	26%	1369	102	(1170, 1568)		
DBD							35.02(3)	<.001
None	38	32	84%	2378	129	(2124, 2631)		
CD-LO	149	101	68%	1933	83	(1770, 2095)		
CD-EO	112	48	43%	1440	61	(1322, 1559)		
ADHD/CD	35	9	26%	1260	120	(1025, 1496)		

Table 53

Comparison of Instruments using Kaplan-Meier Survival Analyses for Adult Reincarceration

	Cases	Censored	%	<i>M</i>	<i>SE</i>	<i>CI</i> (95%)	Log χ^2	<i>p</i>
Model								
<u>YLS/CMI</u>							34.08(3)	<.001
Low Risk	36	35	97%	2613	69	(2478, 2747)		
Moderate	141	107	76%	2151	83	(1988, 2313)		
High	139	79	57%	1737	83	(1574, 1900)		
Very high	18	5	28%	1436	184	(1075, 1797)		
<u>PCL:YV</u>							23.0(2)	<.001
None	158	128	81%	2281	72	(2141, 2421)		
Moderate	137	83	61%	1818	85	(1651, 1985)		
High	39	15	39%	1614	117	(1384, 1843)		
<u>DBD</u>							49.15(3)	<.001
None	38	36	95%	2603	83	(2440, 2766)		
CD-LO	149	117	79%	2180	75	(2032, 2327)		
CD-EO	112	63	56%	1725	76	(1576, 1874)		
ADHD/CD	35	10	29%	1306	127	(1057, 1556)		

Table 54

ROC Analyses of Prediction Instruments with Adult Recidivism

Instrument	<u>General Recidivism</u>		<u>Violent Recidivism</u>		<u>Reincarceration</u>		<u>Federal</u>	
	AUC(CI)	SE	AUC(CI)	SE	AUC(CI)	SE	AUC(CI)	SE
YLS/CMI	.65 (.60 - .71)	.030	.63 (.55 - .70)	.038	.69 (.63 - .75)	.029	.75 (.69 - .82)	.035
PCL:YV	.66 (.60 - .72)	.030	.66 (.58 - .73)	.039	.67 (.60 - .73)	.032	.70 (.62 - .78)	.041
DBD	.69 (.64 - .75)	.029	.66 (.59 - .73)	.036	.72 (.66 - .78)	.029	.71 (.64 - .79)	.039

outcome. The YLS/CMI had the highest AUC in this case. It is noted, however, that none of these AUC findings were found to be significantly greater in size than any others. Thus, by this measure, they all performed equally as well in predicting future adult offending.

Protective Factors

Protective factors have been the subject of controversy within the developmental psychopathology literature. For the present study protective factors were defined as those variables that protect individuals who are considered “at risk” for future offending (see Appendix A). Protective factors are viewed as those variables that make individuals more resilient to the risk factors they already possess. To determine these factors several General Factorial models were constructed. A protective factor was identified as such only if the variable under scrutiny showed a significant interaction with risk when predicting adult outcome. More specifically, the interaction must show that there is a decrease in adult offending only at the highest levels of risk. Hence, statistical analyses focused on identifying variables that interacted with risk in explaining adult recidivism. A factor that increases or decreases the probability of reoffending across all risk levels (i.e., main effect) was defined as a risk factor or absence of a risk factor.

For the present study the disruptive behaviour disorder scale was utilized as a categorical measure of risk for adult criminal offending. This was used because of its ability to clearly identify a subset of offenders who are at risk for future adult offending and also because it is based substantially on the age of onset of behavioural problems and their development over different time periods. Thus, an examination was undertaken to determine what variables would decrease the probability in adult offending, but only for those presumed to be at risk.

When examining those who were most at risk for continued criminal activity several factors were found that had the effect of helping to prevent serious adult offending. The most

prominent of these protective factors was a prosocial family. A significant interaction was found in the factorial model between risk and prosocial family ($F(3, 326) = 4.21, p < .01$). This indicates that a prosocial family had different effects on adult serious recidivism dependent on the level of risk. In this particular case, the prosocial families had little influence on recidivism rates for those with no diagnosis or with late onset conduct disorder. However, the probability of an adult federal offence for those in the highest risk category was reduced if a prosocial family was present. Other family variables found to have significant interactions with risk when predicting federal time was good relations with father ($F(3, 326) = 2.6, p < .05$), positive relationships with sibling ($F(3, 326) = 2.7, p < .05$) and stable accommodations ($F(3, 326) = 3.0, p < .05$).

Some school variables had protective benefits for the current sample. These included attending a regular academic stream during high school ($F(3, 326) = 3.1, p < .05$) and not having a learning disability ($F(3, 326) = 2.64, p < .01$). Having older peers was found to be a protective factor for those at risk ($F(3, 326) = 3.4, p < .05$) as well as having at least some prosocial peers ($F(3, 326) = 3.6, p < .01$). Having no assessed allegiance to criminal peers was protective and resulted in reduced reoffending for those projected to be on track for adult recidivism ($F(3, 326) = 6.9, p < .01$). No additional factors were found to have a protective effect.

Offender Trajectories.

The current research was designed to identify offender trajectories that spanned from early childhood to late adolescence. This was achieved in the current study through coding for trajectories *a priori* up until the termination assessment. Three trajectories were coded for based on the theoretical models of Moffitt (1993) and Hill et al., (1999); those with no or extremely limited conduct problems (non offenders), those with onset of conduct problems in their

adolescence (adolescent emergent) and those with an onset during either their early or late childhood (chronic). In order to determine the continuation of these trajectories into adulthood four trajectories were established based on late adolescent, early adult, and adult outcomes. Four distinct clusters were identified utilizing juvenile and adult outcome measures through k-means cluster analysis. These consisted of no offending, juvenile only re-offending, adult serious no persistence, and adult persistent. All four outcomes were based on whether the youth had been subjected to further incarceration periods during that time interval.

The three *a priori* trajectories were then merged with the four post termination outcome trajectories and subsequently pooled into 6 final trajectories. As a result 36 (11%) were classified as having a “non offender” trajectory, 3 (1%) as “adult emergent”, 118 (35%) as “adolescent desister”, 37 (11%) as “adolescent persistent”, 62 (19%) as “desister”, and 78 (23%) “chronic”. A graphic representation of these trajectories can be seen in Figure 9.

Significant differences in the ratio of males to females in these cells was evident ($\chi^2 = 40.1, p < .001$). Gender breakdown indicates that nonoffenders had a 26:10 male to female ratio, and that all three adult emergent were males. Furthermore, while there were 77 and 41 adolescent desister males and females, respectively, 36 males were considered adolescent persistent while only one female was adolescent persistent. Lastly, 53 males and 9 females were classified as desisters while 75 males and 3 females were considered chronic offenders. As a whole, males were much more likely to persist regardless of the originating pathway.

Figure 9 illustrates the relative seriousness of conduct problems or antisocial behaviour from early childhood to adulthood for 5 of the 6 trajectories (the adult emergent was removed due to an *n* of 3). Thus, the chronic offender shows relatively more conduct problems at each life stage. An offshoot of this pathway is the desister trajectory that exhibits early conduct

Figure 9
Offender Trajectories: Examining Seriousness of Offending Across Time

problems through childhood but by early adulthood these problems have largely desisted. Conversely, the adolescent desister and persistent offender trajectories show few signs of conduct problems during childhood but increases in antisocial conduct are substantial during their adolescence. These trajectories deviate by adulthood. Specifically, the adolescent persistent continues with relatively high levels of antisocial conduct into their adulthood while the adolescent desister largely ceases. The non-offender shows few signs of antisocial conduct at any life stage. Three cases (adult emergent) showed severe antisocial conduct in their adulthood after no evidence of substantial problems in childhood or adolescence. Noteworthy is that during adolescence the relative “spread” of problems is considerably diminished, suggesting that all offender groups engage in approximately the same degree of antisocial conduct during these time intervals.

Predicting trajectories. An analysis was then conducted examining variables that may differentiate between various trajectories. The purpose was to identify individual variables that discriminated between specific trajectories of offending. A series of four logistic regressions were completed. These four regression analyses examined the following pairs of trajectories; chronic versus desister, adolescent persistent versus adolescent desister, chronic and adolescent persistent versus desister and adolescent desister, and nonoffenders versus adolescent desisters and persisters. Table 55 summarizes the independent variables used for the analyses. Odds ratios are presented where significant correlations between predictors and group membership were found.

Many factors that were present during adolescence distinguished amongst offender trajectories. These included variables from community, social, school, family, and intrapersonal domains. Variables were then entered into a series of four step-wise regression analyses.

Table 55

Individual Predictors of Offending Trajectories

	Chronic vs. Desister ¹	Adol. Persist vs. Adol. Desist ²	All Persist vs. All Desist ³	Non- offender vs. Adolescent ⁴
<u>Community</u>				
Housing problems/finances				
High crime area				
Unstable accommodations	2.0		2.6	5.3
Lives away from family			1.6	3.9
<u>School</u>				
Not enrolled		1.6	1.7	1.5
Regular stream		1.8		
Low achievement		2.0	2.1	2.5
Poor teacher relations		2.3	2.1	2.2
<u>Social</u>				
Poor relations with peers			2.3	
Peers outside age range		1.8	1.7	4.1
Antisocial acquaintances			2.1	6.4
Antisocial friends			2.1	4.4
Lack of prosocial acquaintances	2.4		2.7	2.9
Lack of prosocial friends	2.1		2.4	
Allegiance to criminal peers	2.5		2.9	17.7
Organizational involvement	4.2		3.4	
<u>Family</u>				
Marital break-up				
Lack of control	4.4		3.3	5.9
Unsupervised			1.8	
Inconsistent parenting	2.1	2.0	2.4	
Poor relation father	2.7		1.7	
Poor relations - mother				
Parental criminal involvement	2.6		2.2	
Parental substance abuse			1.6	
<u>Intrapersonal</u>				
Alcohol abuse				3.6
Drug abuse	2.2		1.8	3.4
High antisocial attitudes	3.8		3.7	11.4
No prosocial interests			1.8	3.5
Poor frustration tolerance			2.1	4.5
Lack of guilt			2.6	
Learning disability				
ADHD	3.4	2.5	4.8	
ODD			2.7	8.6

* Odds Ratios significant at $p < .05$; (n)s: ¹(78 vs. 62); ²(37 vs. 118); ³(118 vs. 216); ⁴(36 vs. 155)

This was to determine the unique contributions of each variable to the prediction of offender trajectories.

The first of these step-wise regressions examined chronic versus desister offenders. The resultant model extracted three factors ($p < .05$). The first variable extracted was attitudes supportive of antisocial behaviour ($r = .31, R^2 = .10, p < .001$). On the second step ADHD diagnosis was extracted. This raised the Multiple R to .36 and added another 4% to the total proportion of explained variance. The last factor extracted was parental criminality. This increased the Multiple R to .40 and brought the total proportion of explained variance in chronic offending up to 16%. Thus, ADHD, antisocial attitudes and family criminality were all able to account for unique variance in the prediction of chronic offenders.

The second series examined the ability of variables to discriminate adolescent persistent offenders from adolescent desisters. A step-wise regression analyses was completed in which poor relations with teachers was the first variable extracted. This was significantly correlated with adolescent persistence ($r = .18, p < .05$). Two additional variables were able to enter into the regression equation. These included low academic achievement ($\beta = .16, p < .05$) and inconsistent parenting ($\beta = .16, p < .05$). Together, these three variables accounted for 7% of variance in the dependent measure ($F(3, 151) = 3.5, p < .05$). Thus all three variables were able to contribute unique proportions of variance in the explanation of adolescent persistence.

The third step-wise regression analysis was conducted to predict between any persistent trajectory and any desistent trajectory. A total of 4 variables were extracted that produced a Multiple R of .40 and an R^2 of .16. Together these variables accounted for a significant proportion of variance in the persistent trajectories ($F(6, 327) = 15.8, p < .001$). The first extracted variable was antisocial attitudes ($\beta = .18, p < .01$). The second through fourth

variables extracted were ADHD diagnosis ($\beta = .18, p < .01$), inconsistent parenting ($\beta = 1.5, p < .01$), and allegiance to criminal peers ($\beta = .13, p < .05$), respectively. Therefore, these all contributed incrementally to the proportion of variance in the persistent trajectories.

The final step-wise regression was completed utilizing the non-offender versus adolescent onset offenders (i.e., adolescent persister and desister) as the dependent measure. Three variables were able to make significant unique contributions to the variance in the dependent measure. The first factor extracted was antisocial acquaintances. This alone produced an r of .35 ($p < .001$). Lack of parental control was the second factor extracted and was able to make a significant increment in the proportion of variance after antisocial acquaintances was already entered into the regression equation ($\beta = .29, p < .001$). The final variable extracted was allegiance to criminal peers ($\beta = .15, p < .05$). This increased the Multiple R to .47 and added another 2% of unique variance. In total, this model accounted for 22% of the proportion of variance ($F(3, 187) = 17.3, p < .001$). Thus these four variables were able to distinguish between the non-offender trajectory and adolescent onset trajectories.

Notably, the YLS/CMI, PCL:YV, and disruptive behaviour disorder scales were all able to distinguish the chronic pathway from the desister and persistent trajectories from the desisters. Only the ADHD-RS scale, however, was able to discriminate between late adolescence persisters and desisters. As such, the importance of risk factors such as peers and education was found to be different for each trajectory during the adolescent period.

Discussion

The current study was designed to examine predictors of juvenile and adult criminal offending. There is clear evidence that it is not only possible to predict juvenile criminal futures of adolescent offenders but also the adult criminal offending patterns of these same youthful

offenders. The results support the hypothesis that ADHD and disruptive behaviour disorders play a pivotal role in the development and maintenance of criminal offending and that measures such as the Youth Version of the Psychopathy Checklist and the YLS/CMI are valid predictors of short and long-term criminal offending trends. The YLS/CMI showed specific advantages over other instruments in that changes in scores represented real changes in the future likelihood of criminal offending. Furthermore, the current research provided evidence of protective factors and risk factors that differentiated between trajectories of offending.

In retrospect, it is evident that the population in the current study was at risk for future criminal offending during their adolescence. The vast majority of participants engaged in future criminal activity and nearly half went on to have adult criminal records. Perhaps most concerning is that almost 1 in 5 male participants incurred an adult federal sentence. Only a small percentage of clients ceased offending altogether. From a purely statistical point of view, criminal reoffending for this sample was the norm, especially during late adolescence. It is evident that this population most resembles clinically referred samples rather than a normal community sample.

Assessing the Validity of ADHD-RS and Other Disruptive Behaviour Rating Scales

The ADHD-RS showed evidence of both construct and concurrent validity. The factor structure of the ADHD-RS was similar to the tripartite model evident in the DSM-IV. Males typically scored higher on the measure, which is consistent with previous research with the instrument (Dupaul et al, 1998). It differentiated between those receiving an ADHD diagnosis in the community and showed a significant relationship to several cognitive functioning variables. It was noteworthy that differences in the correlations between the two ADHD-RS subscales and various criterion measures did not differ significantly.

The ADHD-RS was predictive of all measures of both juvenile and adult recidivism. It typically was a factor that added incrementally to the prediction of future criminal offending. Despite not being designed as an instrument to predict criminal recidivism, the ADHD-RS scale consistently managed to exhibit predictive validity for these outcome measures. This gives significant credence to the theoretical importance of the diagnostic features of ADHD and the development and maintenance of career criminal offending. What makes this more impressive is that these factors seemed equally as predictive of long-term prognosis. Given that ADHD features predicted adjustment well into adulthood it is conceivable that these are relatively enduring traits of the individual that persist in manifesting themselves in antisocial offending.

The ability of the ADHD-RS instrument to categorize individuals into ADHD categories was somewhat mixed. There was significant evidence that utilizing the ADHD-RS as a tool to diagnose ADHD was useful. Those diagnosed with ADHD were shown to have a history of poor academic, social, and classroom conduct compared with non-diagnosed comparison groups. Fewer differences were found along family background features. As a result, it appears that ADHD as a diagnosis is not strongly related to family upbringing or parenting style. This outcome is consistent with previous findings that emphasized the importance of cognitive and temperamental differences in ADHD populations (Barkley, 1997), rather than familial. Thus, ADHD as a disorder seems to operate primarily outside the influence of family circumstances and is not solely determined by psychosocial stressors.

The identification of subtypes of ADHD with the ADHD-RS instrument showed marginal utility in discriminating either the nature or degree of cognitive, social or academic deficits. There were some trends to suggest that the inattentive subtype of ADHD was more reflective of cognitive impairment while hyperactivity was linked to a lack of parental control

and disruptive behaviour. The combined type showed few differences with the other subtypes across cognitive, social or academic domains. The low number classified in the inattentive type of ADHD likely restricted the usefulness of comparing across ADHD subtypes. At the same time, the low number may be reflective of the uncommon prevalence of this particular subtype in a forensic population. That is, if the ADHD inattentive type shows qualitative differences from other types of ADHD (Barkley, 1997) then its low frequency in a forensic sample is predictable due to the nature of the selection process of the current sample and not being associated with negative adolescent outcomes.

When examining ADHD subtypes in relationship to risk and psychopathy clear distinctions were evident. The combined type of ADHD showed significant elevations in risk and psychopathy. The combined subtype of ADHD was considered to reflect the severity of the ADHD problems, since no qualitative differences on need areas were found. This points to the cumulative effects that the individual features of ADHD are likely to have on future academic and social functioning. The ADHD-RS was considered a valid tool for the diagnosis of ADHD in a forensic setting. The more serious or severe the diagnostic features of ADHD, the higher the likelihood of future reoffending.

The ODD-RS exhibited sound psychometric properties as well as good criterion and concurrent validity. A factor analysis showed this measure to be uni-dimensional. No gender differences were revealed in scoring. The utility of this measure as a tool for diagnosis was questionable given its high concordance rate with CD. Although it was predictive of a number of juvenile and adult criminal outcomes, including future violence, it failed to establish incremental validity after CD had been taken into account. Its use as a diagnostic tool in an early

adolescent forensic sample was viewed as redundant if measures of CD-symptoms or psychopathy were also utilized.

The vast majority of clients in the current study met the DSM-IV criteria for Conduct Disorder. This should not be surprising given that the current population sample was specifically referred due to adolescent conduct problems. The number of symptoms was utilized as a dimensional measure of CD. This showed both concurrent and predictive validity. CD symptoms predicted juvenile and adult criminal outcomes at similar rates as risk instruments or measures of psychopathy. Furthermore, CD symptoms contributed uniquely to the explained variance in juvenile offending even after psychopathy and risk measures had been controlled. Thus, the number of CD symptoms was incrementally valid in the explanation of juvenile recidivism.

When examining the different subtypes of CD it was evident that the early onset subtype of CD had significantly maladaptive cognitive, academic, behavioural, and social functioning compared to the other subtypes. Furthermore, family circumstances variables suggested a more chaotic and abusive/dysfunctional home environment for those with conduct disorder and specifically, those with the earliest onset of the disorder. In this sense, conduct problems, in contrast to ADHD, were often tied to family differences in cohesion, parenting style, and instability. This supports previous research suggesting that the development of CD is largely accounted for by family and environmental circumstances (Hinshaw, 1994)

Perhaps the most important factors when examining any of the disruptive behaviour disorders is the age at onset. In the current study, the onset of ADHD or CD played a pivotal role in determining future risk. This is consistent with an abundance of research on chronic offending (e.g., Farrington, 2000; Ge, Donnellan, & Wenk, 2001; Stattin & Magnusson, 1991).

As a result, any risk instrument used in a practical setting that fails to take age of onset into account is likely doing so in error.

The Issue of Comorbidity. The construction of a classification system that reflects the presence of both ADHD with comorbid CD proved to be a useful strategy when attempting to identify those likely to be most at risk for future criminal offending. This classification scheme showed both concurrent and predictive validity. Group membership was predictive of all criminal outcome measures. In many instances, when categorical prediction was utilized, this classification scheme showed superior predictive abilities than risk or psychopathy measures.

By use of this scheme it was shown that ADHD in combination with CD placed clients at even further risk for negative criminal outcomes. It is clear that the combination of ADHD and CD occur at well above chance levels. The consistent reporting of comorbidity with ADHD in the research (Jensen et al., 1997; Pliszka, Carlson & Swanson, 1999) has been well established.

A theoretically important issue is whether the ADHD with comorbid CD is truly a distinct type. Past research has suggested that childhood problems show little evidence of a bounded or discrete nature (Srouffe, 1997) and that the number of problems rather than a coherence of problems is predictive of later maladaptation. Unfortunately, in the current study, it was impossible to separate ADHD with comorbid CD from ADHD alone due to the absence of “pure” ADHD clients. The ADHD with comorbid CD did not differ significantly from the CD only comparison groups along a number of domains, including family circumstances and social interactions.

In contrast, differences in risk, psychopathy, and educational achievements provide some initial evidence for ADHD/CD being considered a distinct type. Perhaps the strongest case for considering ADHD with CD a distinct disorder is its clinical course and outcome. ADHD/CD

adolescents had more criminal convictions during their adolescence and adulthood and were significantly more likely to persist into serious adult criminal activity than the CD comparison groups.

Overall, however, there is little evidence of qualitative differences in the comorbid group. If ADHD with CD is a separate disorder, the current findings should show tight clusters of symptoms with unique indicators of other syndromes being absent. In the current research, adolescents commonly manifested problems that traversed established categories. Furthermore, the antecedents for ADHD/CD appear to be only slightly different than comparison groups and the comorbid pattern itself is heterogeneous, suggesting a lack of integrity for the syndrome. Although it is possible that one disorder brings on another, it certainly would not be to the extent that has been shown.

Instead of viewing ADHD/CD as a distinct type as the medical model might propose, a more fruitful approach would be to examine it in the developmental context. With the medical model it is often assumed that when a child or adolescence manifests problems that fit two current psychopathology categories, they have two disorders. This is clearly problematic. Comorbidity in this and past studies is the rule, not the exception. The developmental approach, however, is able to account for the apparent presence of two separate disorders.

The developmental model centers on patterns of adaptation and developmental trajectories. This kind of approach suggests that ADHD/CD is not necessarily a distinctive “type” or should not be viewed as “the fledgling psychopath” with an endogenous pathogen as some have suggested (Lynam, 1998) but is rather the accumulation of more and different risk and protective factors over time. The previous approach of looking for a single underlying cause has become too engrossed in determining conditions that children or adolescents either have or

do not have. They view precursors as pathogens or simply early forms of yet another disorder. By doing so the relative importance of experience is ignored, potential research on experiential risk factors, early adaptation, and processes of change are not considered important, and treatment becomes limited to symptom management.

The present findings support a developmental interpretation of the ADHD/CD findings. Clearly the ADHD/CD group had quantitatively more risk factors but did not differ qualitatively in any obvious ways. By viewing this combination of risk factors as a “pathway” rather than the presence of two separate disorders research questions and analyses of data differ substantially and bring about a more coherent framework in which to examine criminal offending.

Rating Scale Use. The rating scales used in the current analysis assisted in the evaluation of adolescents and can potentially lead to treatment strategies dealing specifically with ADHD or CD. They enriched our understanding of potential psychopathologies in a forensic sample and allowed for comparisons across individuals, gender, and circumstances. The potential roles of these assessment procedures, however, would be additive to psychiatric or psychological diagnosis. Thus, they are not a replacement for professional evaluation but may be used for screening, monitoring, and risk assessments. They would allow for consistency across clients in the definition of these various constructs.

It is evident that potential users of any particular scale should not rely solely on one scale for all their assessment needs (Hoge & Andrews, 1996a). A combination of the current battery of scales would likely be beneficial to any thorough assessment by providing unique information and thereby capturing many of the different aspects of adolescent psychopathology that may be relevant to a forensic sample.

Measuring Psychopathy in Adolescent Samples

The CAT and PCL:YV instruments both exhibited strong psychometric properties as well as concurrent and predictive validity. The total scores showed strong relationships with previous criminal history and were predictive of all criminal outcome measures including violent offending. The PCL:YV, in particular, was the highest correlate with most juvenile outcome measures and consistently showed incremental validity in the best predictive models of future juvenile and adult offending.

Despite a lack of confirmation of the existence of a two-factor model of psychopathy, both Factor I and Factor II scores showed predictive validity with adult offending. Particular notice was made of the ability of the Factor I or personality/affective component to outperform the Factor II in predicting adult violent offending. This may suggest a more enduring quality of the personality components and their relative importance when examining long-term maladjustment probabilities. Given the lack of support for the two-factor model, however, these results are difficult to interpret. Isolating specific personality features to determine which contribute to the explanation of negative outcomes for adolescence would likely resolve this issue. Regardless, the ability of the PCL:YV to predict long term outcomes, especially violent offending, has answered several earlier criticisms levied against adolescent psychopathy measures (see Edens et al., 2001).

An important feature of the PCL:YV was its ability to contribute to the understanding of recidivism when CD had already been accounted for. Further, in several instances both Factor I and Factor II were able to do so. This implies that adolescent psychopathy is not synonymous with CD and that its diagnostic features add to our understanding of criminal conduct beyond past incidents of criminal behaviour. What may be true for PCL:YV, however, is that it may not

be identifying a syndrome (i.e., the psychopath) but may instead be a simple accumulation of risk factors or be the adolescent trajectory of the ADHD comorbid CD individual. That is, the PCL:YV was not able to predict long-term outcomes in several instances after both ADHD and CD had been taken into account.

Another explanation for a lack of a two-factor structure of the PCL:YV is that many of the personality components are either difficult to assess through file review or that youths at this developmental age do not typically demonstrate all of these characteristics. The grandiosity item of the inventory is a prime example. It was noted through coding procedures that many professionals who regularly work with youth are inclined to identify youths that exhibit bravado as actually showing an outward manifestation of low self-esteem. This makes reliance on file review to code this information speculative. Furthermore, the glib/superficial item was one of the least endorsed items. This may reflect difficulties in assessing this personality trait through file review and/or may suggest that youths have not yet “learned” or acquired the ability to utilize this interpersonal style. Careful consideration of the developmental aspects of these personality features and assessments for relative impairments may prove to be more discriminating. It is likely that improved methods for assessing affective/personality components and processes, as well as conducting face-to-face structured interviews would increase the predictive accuracy of the PCL:YV and the personality/affective components associated with the construct of psychopathy.

The objective of the CAT scale is to identify core criminal offenders through the identification of early onset of behavioural difficulties. In retrospect, this study’s application of the CAT scoring procedures may not be appropriate. Typically, the CAT works to identify chronic offenders during their adulthood based on childhood or adolescent features given

through self-report. The assumption is that a taxon exists that can be identified through adolescent and childhood features. Problems with this procedure with adults is the heavy reliance on self-report for acquiring childhood information as well as the span of time from occurrence of the phenomenon to the time of retrieval. In the current study these problems are both rectified due to a reliance almost exclusively on collateral sources of information as well as the timing of data collection. Thus, eliminating a reporting bias or memory fade.

These procedures should have improved the ability of the CAT to discriminate between offender types. However, this was not the case. Several other measures were better able to discriminate between offending patterns and trajectories. Several explanations for this finding are possible. First, given that all offenders in the sample had experienced some adolescent problems, the variability in many of the individual items on the CAT was diminished. Furthermore, the CAT in its present form makes use of adolescent developmental factors that are unlikely to differentiate between chronic offenders and desisters in an already conduct disordered sample. Finally, it is possible that a taxon simply does not exist and that any ability of the CAT to predict offending is based on its identification and accumulation of risk factors. So although the CAT shows some promise with this population, problems with its use should be considered prior to future use with young offender populations.

Of more concern are the implications of the use of the CAT on an adolescent sample. It is an instrument that consists of entirely static variables. It suggests that an individual's interactions and experiences with their environment are not determinants of future criminal actions. As such, prevention or intervention strategies are inconsequential following identification.

Searching for Underlying Pathogens. Much of the past literature has focused on finding a particular pathogen assumed to underlie all instances of a disturbance. Career criminals or psychopaths have often been explained through the use of an underlying neuropathology (e.g., Hare, 1991). For instance, recent research stressed the connection between the psychophysiological responses of ADHD/CD youths and psychopathy (Herpertz et al., 2001). Although past researchers have investigated underlying causal factors to account for criminality, this has not been a particularly fruitful approach (Wright et al., 2001). There is considerable support for the developmental criminology perspective that dictates that disorders are the result of a pattern of maladaptation. In this sense there are multiple pathways towards criminality. Even in the current sample, the most severe cases on the chronic trajectories had different risk factors. The concern with the alternative approach is the entire focus turns to finding one pathogen that the individual either has or does not have that is responsible for the origin, onset, and course of criminal offending.

The search for underlying pathogens limits research focus. There is little doubt that endogenous factors may play a role, but it remains important to identify those factors that interact with the endogenous factors and what factors may allow an individual to continue or be redirected away from a maladaptive trajectory. This study attempted to examine features that initiate a developmental pathway that is only probabilistically associated with crime. The etiology of criminal behaviour was conceptualized in terms of a combination of risk factors and protective factors of diverse sorts. An approach for defining criminality must allow for dynamic and malleable qualities rather than being limited to simple descriptions of symptoms. Criminality is not a concept that can be captured by focusing solely on signs and symptoms. It must be defined based on one's surrounding environment, adaptive functioning, and the

relationship between an individual and his environment across time. The developmental model can be used as a framework to view criminology and should not be considered a unifying theory. Instead, it should be viewed within the context of a broader personality and social psychological perspective of crime.

Assessing Risk

The YLS/CMI instrument showed good psychometric properties and both concurrent and predictive validity. YLS/CMI total scores were predictive of all juvenile and adult outcome variables. Several subcomponents or Need Factors showed incremental validity after other measures had been held constant. In particular, the Need Factors of peer relations, attitude/orientation, and education were consistently able to discriminate between recidivists and non-recidivists.

Substance abuse findings remained rather perplexing during the course of the analyses. It loaded as a separate factor during the PCA and typically fared worse at predicting negative criminal outcomes than all other need measures. It is evident that substance abuse may not be a good indicator of antisocial propensity when occurring during adolescence. This lack of significant predictive validity is consistent with the findings reported by Lipsey and Derzon (1998). They reported that substance abuse assessed during childhood was a better indicator of antisocial or deviant conduct. Thus, substance abuse measured during adolescence may be more likely to reflect a different underlying etiology or developmental pathway.

Perhaps one of the most crucial finds was a confirmation of the functional validity of the YLS/CMI. Previous concerns have been raised about the claims of the dynamic nature of the instrument (e.g., Cottle, Lee, & Heilbrun, 2001). Current analyses revealed that changes in overall risk level were related to actual changes in the probability of reoffending. More

specifically, there were consistent findings suggesting that increases or decreases in criminogenic need areas corresponded to changes in the future likelihood of criminal offending.

The implications of the functional utility of the YLS/CMI are far reaching. It suggests that manipulation of these need factors can bring about significant changes to the future probability of offending. This legitimizes intervention strategies targeting these need areas. It suggests that risk is not static and that changes in circumstances and even changes in demeanour and attitude can have a significant impact on reoffending. Thus, by targeting these criminogenic need areas and identifying concrete changes we can expect, at least over the short-term, lower rates of reoffending. These findings indicate that the YLS/CMI is an effective tool not only in the assessment of risk but also in the assessment of need areas. As such, the YLS/CMI is validated as an effective tool in the direction of correctional interventions and the determination of changes in risk

Although changes in the YLS/CMI scores are related to outcome, an alternative explanation exists to the one offered above. It is possible that changes in the YLS/CMI and its subcomponents over time are at least partially the result of more information being available or more thorough assessments being made over time. Thus, as assessors spend more time with their clients they can more accurately determine personality and attitudinal dispositions, thus leading to better predictive accuracy. This may be especially true in situations examining more subjective measures such as temperament. If this were the case, some Need Factors may actually not have any *de facto* changes from intake to re-test.

Another issue that may impede the functional validity of the YLS/CMI is a bias for case managers to endorse positive adjustment. Some evidence was seen for this in the current study. Raw scoring showed that certain static measures were consistently changed from intake to retest

in a positive direction, despite evidence to suggest original information was accurate. Given the current study's framework, it is difficult to determine whether these confirmatory biases hindered or assisted in the functional validity of the YLS/CMI. Nonetheless, many of the more objective measures of Need Factors, such as educational achievement, still showed changes that were related to outcome. It should be added that conservative coding procedures were utilized that would likely have discouraged the discovery of significant findings in this area.

File Review Scoring Concerns

A potential flaw in the administration of all of these instruments is "halo" effects. When teachers are presented with oppositional or conduct disordered children they have been found in the past to elevate ratings of ADHD diagnostic features (Abikoff, Courtney, Pelham, & Koplewicz, 1993). The current study is susceptible to this phenomenon. In this case, positive endorsement of disruptive or aggressive behaviour has the potential to bias raters towards positive endorsements of hyperactive or impulsive conduct, even though the two should be considered separate entities. The operationalization of the diagnostic features of ADHD likely minimized this effect, but given reliance on file review it is conceivable that information obtained from collateral sources was independently subjected to this phenomenon.

Another potential problem was the ability of remaining free from biases of previous functioning. The ADHD-RS, ODD-RS, and PCL:YV are coded based on recent or adolescent functioning. However, it is possible that judgements of current functioning were heavily biased on past incidents. Thus, those judged during their childhood to be severely maladjusted may currently be judged within this context, leading to a bias in favour of remaining consistent across time. The use of multiple sources of information and coding for onset was used to mitigate any

of these effects. The high inter-rater agreement also alleviates some of the concerns regarding coding for these instruments.

Scoring for all instruments, except for the YLS/CMI, reflects functioning at one segment of adolescence. It would have been far more convincing, for example, to determine the scoring of many instruments at different points in time or across developmental stages. The ADHD-RS scale and PCL:YV are likely to have dynamic qualities that could be used to differentiate offenders at different stages of development. The lack of sufficient detail from file information makes any retrospective attempt to score these instruments at different time periods implausible. Future research, however, could be designed to determine whether certain individual items are more prevalent during certain developmental stages. For example, past research has suggested that the hyperactive-impulsivity components of ADHD arise first and are followed developmentally by the inattentive type for those that experience the most negative outcomes.

Gender differences

Gender differences in the scoring of the ADHD-RS were consistent with past findings (Dupaul et al., 1998). Although there were no gender differences in diagnosis of CD, it was quite evident that males had a much higher prevalence of symptoms and were more likely to have an earlier onset of problems. This is consistent with previous research. Thus, although similar numbers reached diagnosis status on CD criteria it is clear that males had more severe conduct problems and had an earlier onset of these problems. In contrast, there were no significant differences in total scores across either the CAT or PCL:YV. The Factor II score of the PCL:YV showed significant group differences. In addition, no significant differences in risk or needs were found across genders. Thus, females were much less likely to be diagnosed with ADHD but showed the same rates of CD, psychopathy, and risk as their male counterparts. The

differences were clearly on the onset of behavioural problems (including aggression, hyperactivity, and social adjustment) and the versatility and types of problem behaviour displayed.

Regardless of these differences, all of the instruments were equally predictive with the female subsample. The YLS/CMI, in particular, showed higher correlations between its total score and juvenile outcomes when examining females as opposed to male samples. This suggests that all instruments remain valid predictors across gender. In fact, other than gender being a risk factor in some circumstances, there were few risk markers specific to each gender. Overall, this suggest that risk factors are the same for both male and female samples and that all measures can be used with confidence across genders.

Another obvious difference between males and females were the patterns of reoffending. Males experienced much higher rates of both juvenile and adult offending. Overall, females were considered to have desisted in criminal activities by their adulthood in over 91% of the cases. The implication for future assessments is that any assessment of relative risk across genders must take base rates into account. Despite risk factors being consistent across gender, there were clear differences in the offending rates for those considered high, moderate, or low risk. Failure to take into account base rates for female offenders is likely to lead to over-estimates of reoffending.

There has been limited investigation into whether females with an early onset to reoffending are likely to persist in an antisocial pathway. The current analyses revealed that females could be identified based on their trajectories of offending. Despite a much lower baserate of offending and adult offending in particular, females who showed early onset of antisocial conduct were also more likely to continue with antisocial behaviour into their

adulthood than late onsetters. This is consistent with recent work examining early conduct disorder in females (Cote, Zoccolillo, Tremblay, Nagin, & Vitaro, 2001) that supports an early onset pathway for females and antisocial behaviour, just as has been established for males. In this sense, an early treatment and prevention strategy may be just as effective for females with early and severe behaviour problems as is the case for males.

It is conceivable that females who have early or late onset problems go on to experience different negative psychosocial outcomes. Those females who have ADHD, for example, have previously been found to be more at risk for psychosocial impairments than their male counterparts (Rucklidge & Tannock, 2001). This might suggest that females go on to have more psychological problems. This outcome would not be detected in the present study.

Risk Prediction Implications.

Several observations from the current research are noteworthy when making predictions of future criminal activity. First and foremost, is that the prediction of both short and long-term risk for adolescent offenders is possible, and in many cases quite impressive. It is evident that the more risk factors each participant had, the more likely they were to reoffend. There was no evidence of a sufficient or necessary condition for later offending. Rather, there were consistently unique combinations of risk factors that led to criminal offending.

The current study reaffirms the “Big Four” (Andrews & Bonta, 1998) as the most prominent risk factors for future criminal offending. In virtually every analysis criminal background, personality features (such as hyperactivity or psychopathy), peer relations, and antisocial attitudes played a significant role in the best predictive model. Perhaps the only exception was the inclusion of education as playing a pivotal role in juvenile offending.

The importance of early onset of behavioural problems and the stability of antisociality from adolescence to adulthood was a consistent theme of the current findings and is remarkably consistent with past research in the area (see Cernkovich & Giordano, 2001). This particular finding is the basis for most criminological theory (i.e., latent trait perspective and life/course models) but also gives legitimacy to two central tenets of the development perspective. The first is that that past experiences are likely to reflect later outcomes and that the more time spent on a pathway the more probable it is to be followed. Thus, the earlier one starts antisocial activity and remains on this pathway the more difficult or unlikely it becomes that they will be diverted.

Trajectories

One of the more interesting features of the current study was the identification of six trajectories or “pathways” for criminal offending. The group of chronic offenders in the current study showed considerable similarity to the group of early onset or life-course persistent offenders described by Moffitt. All accounts suggest that this small percentage of the criminal population showed a long-term inclination to offend. In contrast to previous research that has typically identified three or four trajectories (e.g., Moffitt, 1993), the current study may be more sensitivity to offending patterns over juvenile, early adult, and adulthood. This strategy allowed for the identification of the “adolescent persistent” offender.

It was evident from the results that many of these trajectories could be differentiated based on adolescent performance variables. In particular, when identifying those who exhibited conduct problems in their childhood, it can be seen that just more than half continue with serious criminal careers. The interesting point is that those who continued could be differentiated from those that desisted on many variables. Specifically, the most severe cases, even amongst those showing an early onset of severe problems, were still those most at risk for continued offending.

Thus, as has been shown in the past, severity of conduct is a risk marker, even amongst those showing severe behavioural problems at an early age (Frick, 1998). This points to the potential of accumulation of risk factors being prominent.

Dynamic variables differentiated between chronic and desister trajectories. The presence of antisocial attitudes and a lack of prosocial friends and acquaintances during adolescence predicted those who continued on towards criminal careers and those that desisted. This finding not only points to the importance of antisocial attitudes and peers but perhaps more crucially to the point that individuals have the potential to be diverted from careers criminal pathways.

These findings are consistent with past preliminary research examining violent offending trajectories (Hill et al., 1999) as well as the Wright et al., (2001) study implicating prosocial ties as the factor most strongly effecting those prone to crime. The accumulation of risk factors, or perhaps the absence of promotive factors (Stouthamer-Loeber et al., 2002), remains an important determinant of course and outcome for the chronic offender. Current findings give credence to intervention strategies targeting these need areas with youths on these pathways in order to divert them from long-term chronic problems. It is supportive of the idea of the additive quality of promotive factors potentially assisting in the management of this risk.

It is notable that when examining protective factors through different statistical analyses, similar variables were determined to be protective. These included allegiance to antisocial peers and antisocial family. These separate statistical analyses determined that family and peers supportive of criminality are likely to be a determining factor for those who show the early onset of behavioural problems and persist. Simplified, those who have behavioural problems from an early age are less likely to continue if families are not criminally oriented and there are prosocial peers. Thus, data show that it is possible for severely crime prone youth to successfully desist

from crime if they possess prosocial ties and prosocial attitudes. From a social-cognition perspective (Bandura, 1986) it could be argued that these positive family and peer models prevent antisocial attitudes and beliefs from developing or becoming engrained within the individual, which thereby reduces the likelihood of future offending. It is unknown, however, whether the antisocial parents pass on genetic pre-dispositions towards antisocial behaviour or act as a model.

Although distinctions between chronic and desister trajectories have a place in the developmental literature, differences between adolescent desisters and persisters, as identified in the current research, can have significant implications for intervention strategies. The presence of a late onset but persistent trajectory is somewhat consistent with the Nagin and Land (1993) and Fergusson et al. (2000) studies that found a relatively stable but slightly increasing pattern of offending during adolescence and early adulthood.

The results suggest that there are few identifiable differences between those adolescents who commence antisocial behaviours during their adolescence and continue to do so during their adulthood and those that desist by adulthood. The primary features of those who continue appear to be their limited achievements/attachments to academic endeavours and parenting. Thus, the vast majority of those late onset offenders desisted, but those who continued typically had removed themselves from achievements in school and did not have proper parental supervision. The identification of these distinctions offers intervention strategies for these offender pathways. By targeting school and parenting coping strategies for these groups where a deficit is identified there may be opportunities to decrease future adult offending.

Despite the continuance from adolescent to adulthood for late onset offenders it is clear that this trajectory is not typically involved in as much serious offending as the chronic offender

trajectory. From the earlier analysis it also seems that there is a tapering off by adulthood for the adolescent persister. Increased follow-up time with this trajectory may show a continuation of the decline in seriousness of offending into late adulthood for this group to the point of desistence by mid adulthood.

Overall, when examining differences across various trajectories it becomes apparent that the accumulation of risk factors or needs could discriminate amongst group trajectories. Chronic offenders were identified as having a high exposure to community problems, antisocial peers, family adversity, and individual difficulties. Nonoffenders, meanwhile, had relatively little exposure to these risk factors while the late onsetter profiles lay between the others extremes and are consistent with Fergusson et al.'s (2000) moderate risk offender. Whatever the case, simple cognitive deficits and early functioning markers were not the sole determinants of chronic offending and additional functioning variables were necessary to in order to discriminate between those most at risk.

Future Research

In order to provide a fully viable and distinctive alternative to the medical or classification model, future research is needed to trace trajectories of offending prior to the point of disturbance. In the current study the trajectories have already separated themselves from one another by the age of 7. Tracing the pathways further backwards to where there is homogeneity will be essential in order to offer a complete alternative. This may provide insight and allow for the identification of different pathways and predictors of pathways. It may also allow identification of those who, at the age of 7, show onset problems but are simply exhibiting similar symptoms of different pathways. Further longitudinal research beginning prior to the

onset of any antisocial conduct is necessary to answer these questions. This may untangle causal mechanisms and processes and may allow for the resolution of classification problems.

An important aspect of examining factors relating to reoffending is to know what happened and at which stage in time it happened. The current research suggests the existence of a “sensitive period” during early and late adolescence. These sensitivity periods may be most open to amelioration (Cicchetti, 1993) and therefore should be crucial in the allocation of resources. Future research could examine changes made through interventions in reoffending patterns for each trajectory at specific periods. This could help determine whether specific intervention strategies are best suited to different trajectories at certain times.

This leads into the responsivity principle (Andrews & Bonta, 1998). This principal suggests that any intervention strategy must be properly matched through either style or mode so that it is consistent with the learning style and ability of the offender. This concept appears particularly relevant within a developmental framework. Future study can look with more scrutiny at particular styles and modes of treatment for different trajectories. Furthermore, many of the current psychopathologies may play a substantial role in the readiness for treatment. Forth and Mailloux (2000) have, for example, suggested that psychopathy features need to be taken into account when designing or implementing treatment programs. Certainly ADHD and CD and the symptoms presented in each of these syndromes are likely to be factors that need to be taken into account when developing effective intervention strategies.

A priority of future researchers should be on discovering the protective processes or mechanisms of criminal offending. Instead of research only examining risk or protective factors, a more thorough understanding would be gained by exploring mechanisms that operate to distinguish between different trajectories. For instance, exploring the process that allows youths

to generate antisocial attitudes and allegiance to criminal peers would allow for intervention strategies to be developed to specifically combat this problem. Emphasis should be determining how protective processes work and whether or not they impact on risk through alteration of exposure to risk, reducing negative chain reactions, enabling youth to draw on resources or complete tasks more effectively, or exposing them to more opportunities. The research to date on protective mechanisms has been minimal.

The main issues in the search for a pathway towards a criminal career continues to be establishing how many pathways there are towards career criminal offending, what factors are able to distinguish these pathways, and what sequences of development are presented in each pathway. These issues have undergone considerable debate in the literature (Blumstein et al., 1986; Loeber & Hay, 1996; Loeber & Leblanc, 1990; Nagin, Farrington, & Moffitt, 1995; Tolan & Loeber, 1993). The determinants of moving along various pathways and the extent to which individuals do not follow a specified pathway, however, has not been adequately specified to date (Loeber and Hay, 1996; Tolan & Thomas, 1995; White et al., 1994). The current research took steps towards answering these questions but because of the retrospective nature of data collection it was not able to identify specific processes along each trajectory. Future research should continue to examine processes and interactions along each trajectory.

Synthesis

The current results can be largely interpreted within a developmental perspective. This point of view purports that development of antisocial conduct is a maladaptation, rather than a disease, which reflects the totality of the developmental context up until any specific point in time. Thus, criminal conduct evolves through a series of adaptations that each individual makes in their unique environments. A criminal or offender is not seen as the result of a single

endogenous pathogen. Instead, it is the result of a myriad of risk and protective factors operating over time. Thus, developmental criminology is an approach to understanding the emergence and maintenance of criminal offending over time. It is an integrative approach that incorporates different theoretical perspectives of development. Its focus is not limited to cognition, behaviour, biology or social factors. Instead it attempts to ascertain the impact of each of these elements in the understanding of how they contribute to the formation of antisocial behaviour.

The concept of "pathways" has provided a framework from which the implications of the developmental model of psychopathology can be stipulated. By defining developmental criminology as a study of "pathways" of offending an importance has been given to defining these paths. Instead of focusing on symptoms, classification, and causes of a disorder, as previous researchers have done, the developmental model views most disturbances as a process. The nature of the developmental perspective is that it allows for the formation of different and unique research questions; How do individuals get off track?; What track are children likely to take?; What factors tend to keep them on track?; What is required to get them back on track? Thus, research investigating early periods of adaptation, onset of a disturbance, and experiential factors that influence continuity or desistance on any trajectory start to become a priority when one begins from a concept of "pathways". From this perspective it is hoped that patterns of adaptation, the combination of factors and contextual variations that differentiates trajectories, and the processes that influence continuity or desistance of individuals on pathways are discovered. By using the concept of pathways, the etiology of a disturbance is conceptualized by the combination of risk and protective factors that define the entire course.

A developmental perspective is thought to be a preferred approach to the current data because it allows for the generation of questions about the factors that place individuals on

pathways probabilistically leading to later offending patterns and identification of the factors that enable an individual to remain on a particular trajectory or deflect them from such a path once they have already joined. By identifying factors that distinguish between trajectories or lead away from serious offending there is not a focus on symptoms or characteristics of offenders but rather preventative or management of these factors.

In this particular data set it seems clear that it is the unique combination of risk and protective factors that governs criminal offending. This is consistent with other areas of psychopathology (Sroufe, 1997). It is reasonable that the development of criminal behaviour in particular is dependent on how the individual adapts, interprets, and creates experiences as well as responds to environmental or circumstantial changes. Thus, criminal behaviour from a developmental perspective is not simply the interaction between an endogenous pathogen and the environment, but also the endogenous pathogens, environment and the history of adaptation up until any point in time. The current findings, for instance, suggest that prior adaptation or maladaptation in this case has a profound effect on later outcome. Thus, prior adaptation is of profound importance and deserves a central place in the research.

Conclusion

There is little doubt that a number of the instruments used in the current study can be used in forensic settings to determine risk levels of clients. The differences amongst the instruments or predictors such as the YLS/CMI, PCL:YV, ADHD-RS, and DBD scheme in terms of prediction are not substantial enough to suggest that one risk instrument is preferred over another. The relative importance of each often differed depending on what outcome variable was being examined. However, in making a complete evaluation of the youthful offender, an instrument needs to be dynamic or capable of changing over time and circumstances. The

YLS/CMI is the only instrument designed to reflect change over time. In addition, the YLS/CMI is capable of identifying treatment target areas of correctional interventions that upon change alter the probability of future recidivism. Thus, it can assist in the management of young offenders through the identification of criminogenic need areas.

The implications of the present research are far reaching. It offers service providers guidelines for the assessment of youths who are “at risk” for continued criminal activity. Not only is information provided that can help correctional decision makers decide who is at immediate risk for continued delinquency, but it may identify subgroups of offenders who are at risk for serious and violent conduct through early adulthood. By systematically assessing a variety of static and dynamic variables this research has the potential to identify where professionals should allocate resources for the supervision and treatment of these youths. In addition, given the capacity of identifying chronic offenders, appeals should be made to policy makers to make a shift in the allocation of resources towards prevention for high-risk children and intervention for identified adolescence rather than treatment of adult chronic offenders. Therefore, the results of this study have immediate practical implications for the prediction of general and violent recidivism as well as interventions and treatments with young offenders.

In summary, the current study examined different antisocial outcomes amongst an adolescent population at risk for criminal involvement. Results showed that it was possible to predict criminal outcomes and to distinguish amongst different “pathways” or trajectories of offending. A developmental approach was utilized in the explanation of the findings. This allowed for an integration of many of the findings into a concise theoretical framework that emphasizes new and exciting research questions and emphasizes the importance of early identification, prevention, and intervention efforts with young offenders.

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Appendix A

COMMUNITY SUPPORT TEAM PROJECT
CODING MANUAL

OFFENCE DATA**Offence Terms defined**

<u>Previous Offence:</u>	Any convictions taking place up to the conviction the client was serving a disposition for at the time of the referral to the CST.
<u>Index Offence:</u>	Any offence for which the client is serving a disposition for at the time the client was referred to the CST. Can include outstanding charges at time of referral if later convicted.
<u>Violent Index:</u>	If the offence for which the client is serving a disposition for at the time the client was referred to the CST is considered violent.
<u>In-Program Offence:</u>	Any arrest or conviction that occurred from the time the client was referred to the CST until the client was terminated.
<u>Juvenile Recidivism:</u>	Any conviction that was dealt with in a juvenile court subsequent the client's involvement with the CST and resulted from criminal behaviour occurring after the termination date.
<u>Adult Recidivism:</u>	Any conviction that is dealt with in adult court proceeding the client's involvement with the CST and resulted from criminal behaviour occurring after the termination date.
<u>Violent Offence:</u>	Any offence involving harm or potential physical harm to the victim includes; Homicide (murder/manslaughter), all assaults, robbery, sexual assault, use of firearm, point a firearm, forcible confinement and threatening. Does not include; possession of a weapon, carry concealed weapon, or resist arrest. Any attempt counts as if the actually offence was carried out successfully, except attempt murder. Violent convictions are convictions stemming from a violent offence.

Risk Terms Defined

<u>Risk Factor:</u>	Factors that increase the probability of a negative outcome.
<u>Protective Factor:</u>	Factors that counteract the negative effects of established risk factors and promote pro-social development. Thus, when at risk there is stability or no increase in negative outcomes when the attribute is present. For statistical purposes, this is an interaction. Thus, protective factors have different effects across different levels of risk. All YOLSI items (see pg. 279-281) and Special Needs items from the YLS/CMI (see Section III, appendix B) were subjected to an analysis to determine whether they were "protective" in nature.

COMMUNITY SUPPORT TEAM DATA ENTRY CODING MANUAL

DEMOGRAPHICS

Client Number

MUST BE ENTERED BY C.S.T.
NEED TO ENTER BEFORE
SEARCH OR BEFORE
ADDITIONAL FILES ARE
PLACED INTO THE
DATABASE

Client Name

Last Name

First Name

VARIABLE NAME	Code	DESCRIPTION AND OPTIONS
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REFERRAL

CLIENT NUMBER	<input style="width: 125px; height: 20px;" type="text"/>	This must be supplied by the C.S.T. and be entered prior to a search or entry of new data
CLIENT NAME	<input style="width: 125px; height: 20px;" type="text"/>	Format: (UPPER CASE) e.g. ROWE, ROBERT
DATE OF REFERRAL	<input style="width: 125px; height: 20px;" type="text"/>	Format: mmm-dd-yy e.g. 7-4-68 IS JUL-4-1968
Probation Office	<input style="width: 125px; height: 20px;" type="text"/>	1. Ottawa 2. Cornwall 3. Pembroke 4. L'Orignal 5. Other
Probation Officer	<input style="width: 125px; height: 20px;" type="text"/>	Format: LAST NAME, FIRST NAME e.g. MANSON, CHARLES
Youth agreed to referral	<input style="width: 125px; height: 20px;" type="text"/>	1. Agree 2. Disagree 3. Unknown

<div> <div> Youth's reaction to referral </div> <div> </div> <div> 1. Positive 2. Tentative 3. Negative 4. Unknown </div> </div>
<div> <div> Family agree to referral </div> <div> </div> <div> 1. Agree 2. Disagree 3. Unknown </div> </div>
<div> <div> Family reaction to referral </div> <div> </div> <div> 1. Positive 2. Tentative 3. Negative 4. Unknown </div> </div>
<div> <div> Reasons for Referral </div> <div> <div> Life Skills Sub. Abuse Counselling Sub. Abuse Assessment Academic Family Counselling Functional Family Therapy Reintegration Alternatives to Custody Anger Management Anti-social Attitudes Employment Skills Sexual Counselling Supportive Counselling </div> <div> </div> <div> 0. No 1. Yes LEAVE EMPTY IF UNKNOWN These are found on the referral form ... If an explanation then choose the ones that best exemplifies the reason for referral </div> </div> </div>
<div> <div> Other (specify) </div> <div> </div> <div> Input additional reason for referral </div> </div>
<div> <div> Status of Referral </div> <div> </div> <div> Choose if accepted or rejected at referral 1. Referred/Rejected 2. Assessed/Rejected 3. Participated </div> </div>

ASSESSMENT DATA	CODE	DESCRIPTION AND OPTIONS
DATE OF ASSESSMENT		Format: mmm-dd-yy
Date of Birth		Format: mmm-dd-yy
Gender		1. Male 2. Female
Grade Level		Enter current grade level
School Program		Current program 1. Basic/Remedial 2. General/Advanced 3. Vocational 4. Private/Independent study (high school) 5. Learning disabled 6. Social/Behavioural adjustment 7. Not attending
Social Support Unit		Ever in social support unit during elementary 0. No 1. Yes
Current Residential Status		1. Open Custody 2. Closed Custody 3. Placed or Ordered outside the home (e.g. C.A.S) 4. Living at home on probation or by order 5. At home with no disposition 6. Living independently
Lived with parents until 16		Indicate age that the client first stopped residing with his natural parents (for any reason). More than one month.
SES of client's family		1. Non-working poor (U.I.C./Welfare) 2. Working poor (small income/few assets) 3. Middle class (good income/some assets) 4. Upper class (high income/many assets)
Domestic family life		1. Seemingly stable and caring 2. Unstable but caring 3. Unstable and abusive

Status of parents		1. Living together 2. Separated/divorced 3. One or both deceased
ASSESSMENT	CODE	DESCRIPTION AND OPTIONS
Problem solving Communication Skills Life Skills Substance Abuse Academic Achievement Family Problems Peer Relations Accommodation Aggression/Anger control Impulse Control Capacity for Empathy Anti-social attitudes Relations: authority figures Employment Problems Motivation		Caseworker observations of client based on all available information * Code Extent of problem from 1 to 10 1 = No Problem 10 = Major Problem
Other (specify)		Indicate another problem area if applicable
YOLSI score-sheet Intake Assessment		As indicated by CST worker * scoring errors corrected
YOLSI_1		Prior closed custody
YOLSI_2		Two or more prior convictions
YOLSI_3		Three or more present offences
YOLSI_4		Arrested under the age of 16
YOLSI_5		Charges laid while open/probation
YOLSI_6		Shoplifting/stealing
YOLSI_7		Vandalism/mischief
YOLSI_8		Break and Enter
YOLSI_9		Assault/violence
YOLSI_10		Armed robbery
YOLSI_11		Trespassing/loitering
YOLSI_12		Breach of probation/open custody
YOLSI_13		Sexual offence/misconduct
YOLSI_14		Theft
YOLSI_15		Possession of stolen goods

YOLSI_16		Forgery/fraud
YOLSI_17		Smokes tobacco
YOLSI_18		Ever used illicit drugs
YOLSI_19		Regular use of cannabis
YOLSI_20		Regular use of other drugs
YOLSI_21		Charges/convicted of poss/trafficking
YOLSI_22		Alcohol abuse
YOLSI_23		Substance use interferes with functioning
YOLSI_24		Crimes to satisfy cravings
YOLSI_25		Crimes due to poor judgement/intoxication
YOLSI_26		Not enrolled in school
YOLSI_27		Truant
YOLSI_28		Failed an early grade (gr 1-6)
YOLSI_29		Poor school achievement
YOLSI_30		Poor classroom behaviour
YOLSI_31		Suspended or expelled
YOLSI_32		Poor relations with peers
YOLSI_33		Poor relations with teachers
YOLSI_34		Has never been employed
YOLSI_35		Has been fired
YOLSI_36		Receives social assistance
YOLSI_37		Chaotic family
YOLSI_38		Poor relations with mother
YOLSI_39		Poor relations with father
YOLSI_40		Poor relations with siblings
YOLSI_41		Perception of poor parental supervision
YOLSI_42		Has been in group home
YOLSI_43		Often away from home
YOLSI_44		Family criminal history
YOLSI_45		Family psychiatric history
YOLSI_46		Family substance abuse history
YOLSI_47		Physical abuse
YOLSI_48		Sexual abuse
YOLSI_49		Sibling in group home
YOLSI_50		Could make better use of time
YOLSI_51		No pro-social interests
YOLSI_52		Socially isolated
YOLSI_53		Has criminal acquaintances
YOLSI_54		Has criminal friends
YOLSI_55		Has few pro-social acquaintances
YOLSI_56		Has few pro-social friends
YOLSI_57		Peers outside age range
YOLSI_58		Strong allegiance to criminal peers

YOLSI_59		Has sexual experience
YOLSI_60		Is promiscuous
YOLSI_61		Is unconcerned with birth control
YOLSI_62		Has children
YOLSI_63		Lives away from parents/guardians
YOLSI_64		Housing problems
YOLSI_65		Frequent address changes
YOLSI_66		High crime neighbourhood
YOLSI_67		Psychological intervention
YOLSI_68		Attempted suicide
YOLSI_69		Supportive of delinquency
YOLSI_70		Poor attitude towards sentence
YOLSI_71		Has tattoos
YOLSI_72		Absence of reasonable future plans
YOLSI_73		Intends to continue crime
YOLSI_74		Psychological intervention needed
YOLSI_75		Intellectual disorder
YOLSI_76		Belligerent during interview

**TERMINATION
STATUS**

DATE of TERMINATION

Format: mmm-dd-yy

Termination resident status

1. Open Custody
2. Closed Custody
3. Placed or Ordered outside the home (CAS)
4. Living at home on probation or by order
5. At home with no disposition
6. Living independently

Reason for Termination

Reason for Termination

1. Rejected after assessment
2. Completed CST
3. Withdrew: end of disposition
4. Withdrew: motivation/refusal
5. Withdrew: miscellaneous
6. Returned to custody

Offences - Previous Criminal Conviction

Source: Assessment Reports Referral sheets, Pre-Sentence Reports, and official Records

Variable Name	Description (must be a conviction on record)	Total number of offences
Murder/Manslaughter	As described	
Attempted Murder	As described	
Serious assaults	Includes; ACBH, Aggravated, Weapon	
Common assaults	Those not deemed serious (above).	
Threatening	All threatening offences	
Assault police	Any assault on peace officer	
Serious sex assault	Includes; CBH, aggravated, with a weapon	
Common sex assault	Those not listed above	
Other sex offence	Includes; exhibitionism, prostitution, indecency	
Robbery	As indicated	
Armed robbery	Aware of a weapon or Armed Robbery	
Possession of a weapon	Any offence dealing with possession but not with any type of use of that weapon	
Use of weapon	Includes; Point firearm, dangerous use, Use of firearm during the commission of offence	
Theft	Includes; Over, under, possession of stolen property, Auto theft etc.	
Break-In	Any break-in committed for property reason.	
Fraud	Includes; fraud, forgery, use/possession of stolen credit card	
Personation	Any personation charge	
Possession Drugs	Possession or use of narcotics	
Trafficking	Trafficking or Possession with the intent	
Driving	Any major driving charge; Impaired, fail to remain, dangerous driving	
Fail to comply	Any breach of probation or bail	
Fail to appear	Any fail to appear for judicial service	
UAL	Unlawfully at Large (or AWOL reference)	
Escape	Any escape or attempt from custody	
Obstruct/resist	Any obstruct justice or resist arrest	
Mischief	Includes mischief and mischief to property	
Willful damage	Any charge stemming from destruction of property except mischief, include arson	
Cause a disturbance	Cause a disturbance	
Miscellaneous	Any offence not falling obviously into one of the above categories	
Forcible confinement	Includes forcible confinement/kidnapping	
Arson	Any charge related to arson or fire-setting	

Offence Previous

OFFENCE DATA	CODE	DESCRIPTION AND OPTIONS
DFC	<input type="text"/>	Indicate date of first conviction on record
AFA	<input type="text"/>	Age at first arrest (police contact)
Off_TOT	<input type="text"/>	Number of previous convictions
INC_TOT	<input type="text"/>	Indicate the total number of separate incarceration periods. Includes current
PROB_TOT	<input type="text"/>	Number of previous probation orders (can overlap; count all)
Current disposition	<input type="text"/>	Indicate the disposition the client is serving at the time of referral (also include if upped due to O/S at referral)
		1. None 2. Probation/fine 3. Open 4. Closed/secure 5. Close with Open to follow
Prior record	<input type="text"/>	0 No 1 Yes
Violent index offence	<input type="text"/>	0 No 1 Yes

In program - offending

New Charges during CST	<input type="text"/>	If client arrested or charged while with CST
Total number new offences	<input type="text"/>	Total all counts and charges while with CST
Types of new offences	<input type="text"/>	Sexual Assault
	<input type="text"/>	Assault(of any type)
	<input type="text"/>	Robbery
	<input type="text"/>	Other violent (weapon&threats)
	<input type="text"/>	Arson
	<input type="text"/>	Break and Enter
	<input type="text"/>	Theft/possession of Stolen Goods
	<input type="text"/>	Fraud/forgery (credit card)
	<input type="text"/>	Other Property
	<input type="text"/>	Drugs

***Indicate if the client was arrested for offences that fall into these categories**

***pick the closest category if not specifically listed**

***one offence may fall into**

more than one category
e.g. assault with weapon
code assault and weapon

Dispositional(breach, fail to appear etc)
Driving offences
Escape (or UAL)

Disposition IP Charges

--

1. Withdrawn or not guilty
2. Convicted: No custody (e.g., probation)
3. Open Custody
4. Closed custody
5. Disposition of offence(s) unknown

Disposition new charges

Probation(months)
Open custody(month)
Closed Custody(months)
Community Service Order (Hours)
Fine (Dollar value)

Versatility components

V1 Murder

Any homicide

V2 Assaults

Any assault

V3 Threats

Any threats

V4 Assault Authority

Any assault on teacher, parent, staff, officer

V5 Sexual offence

Any sexual offence, inappropriate behaviour directed towards another

V6 Robbery

All robberies, taking through confrontation

V7 Weapon

Any weapon use or possession

V8 Theft

All crimes of theft and possession of stolen property

V9 Break and Enter

Any house breaking or attempt

V10 Fraud

All frauds, crimes of manipulation, forgery, use of stolen credit card

V11 Drugs

All possession or trafficking, drug problems

V12 Driving

All serious driving offences

V13 Breach

Fail to comply and appear with any order

V14 Escape/UAL

Escape from correctional facility or group home, period of being at large in the community

V15 Obstruct Justice

Any charge or deception of the criminal justice system

0 No
1 Yes

V16 Vandalism/Mischief	All criminal acts relating to destruction or disturbance	
V17 Forcible Confinement	Forcibly detaining another against their will	
V18 Arson	Any fire-setting with significant damage	
V19 Cruelty Animals	Ever cruel to animals	
V20 Miscellaneous	Any criminal acts not accounted for	
Criminal versatility total	Total of all versatility items	

YOLSI score-sheet
Retake Assessment
2nd wave assessment

As indicated by CST worker
* scoring errors corrected

TLSI_1		Prior closed custody
TLSI_2		Two or more prior convictions
TLSI_3		Three or more present offences
TLSI_4		Arrested under the age of 16
TLSI_5		Charges laid while open/probation
TLSI_6		Shoplifting/stealing
TLSI_7		Vandalism/mischief
TLSI_8		Break and Enter
TLSI_9		Assault/violence
TLSI_10		Armed robbery
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TLSI_12		Breach of probation/open custody
TLSI_13		Sexual offence/misconduct
TLSI_14		Theft
TLSI_15		Possession of stolen goods
TLSI_16		Forgery/fraud
TLSI_17		Smokes tobacco
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TLSI_19		Regular use of cannabis
TLSI_20		Regular use of other drugs
TLSI_21		Charges/convicted of poss/trafficking
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TLSI_25		Crimes due to poor judgement/intoxication
TLSI_26		Not enrolled in school
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TLSI_29	Poor school achievement
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TLSI_54	Has criminal friends
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TLSI_56	Has few pro-social friends
TLSI_57	Peers outside age range
TLSI_58	Strong allegiance to criminal peers
TLSI_59	Has sexual experience
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TLSI_70	Poor attitude towards sentence
TLSI_71	Has tattoos

TLSI_72
 TLSI_73
 TLSI_74
 TLSI_75
 TLSI_76

	Absence of reasonable future plans
	Intends to continue crime
	Psychological intervention needed
	Intellectual disorder
	Belligerent during interview

Additional Rating Items

Initial Trajectory

0	No behavioural, social or ADHD symptoms prior to the age of 7. No substantial conduct problems during adolescent. Three or less CD symptoms, with no incarceration periods.
1	No behavioural, social or ADHD symptoms prior to the age of 7. CD symptoms may show themselves between 8-10 but extremely limited. Four or more CD at adolescent assessment.
2	Initial symptoms of ADHD, behavioural, social, disruptive or CD show themselves prior to age 7. Continued behavioural concerns from ages 8-10.

Previous Violence

0	No, or extremely minimal, threats or acts of violence (i.e., 1 or 2)
1	Previous threats or violent acts of moderate seriousness directed purposively against property or people, without the use of a weapon.
2	Previous extremely violent acts carried out possibly though not necessarily with intent to harm others, with or without a weapon.

Note 1: Previous violence includes any violence before termination from CST

Note 2: **Moderate violence** include destruction of property, moderate physical assault (e.g., mild pushing, light slapping), robbery, negligence, and/or threats of violence against others.

Extreme violence includes murder, attempt murder, some arson, sexual assault, and severe physical assault (e.g., punching, breaking arms etc.).

Note 3: Generally, Assault Causing Bodily Harm, Aggravated Assault, Assault with a , Threats with a weapon, Point a Firearm convictions are a 2 unless available details of offence dictate otherwise

Age at First Violent Offence

0	No, violent offences
1	16 or Over
2	15 and Under

Note 1: Code for any offence regardless of conviction. Offence must involve the criminal justice system

Current Substance Abuse

0	No evidence of frequent or heavy use or impairment in functioning.
1	Evidence of frequent use with moderate impairment in functioning.
2	Evidence of heavy use with severe impairment in functioning.

Note 1: Moderate impairment includes brief periods of time in which the person fails to meet responsibilities to self and others, or does not function up to his or her usual capacity. For example, being late for work/school, irritable, severely hungover, experience a blackout, coming home drunk, driving while impaired(xl).

Severe impairment includes lengthy periods of time (i.e. more than a day) in which the person fails to meet responsibility to self and/or others. For example, expulsion from school for drug use, fired, repeated impaired driving, complaints from family, friends, diagnosis of substance abuse disorder, bingeing for more than 2 days, heavy drug debt, dealing or committing crimes to sustain habit.

Note 2: Generally, impairment across two domains will be required for a score of two unless problems encountered in one domain is excessively severe (e.g. repeated physical assaults when intoxicated, several overdoses, entered into drug clinic etc.)

Insight

0	Aware of the gravity and seriousness of his current situation, understands how behaviour has negative impact on others, appreciates the social impact of his actions, is able to admit to problem areas and is aware the impact these have on his/her behaviour (i.e., peers)
1	Acknowledges some wrongdoing, knowledge of some of the negative impact of his behaviour, aware of some problem areas but no awareness of how to avoid in the future, sees self as fine and will not need to make changes to avoid future trouble
2	No awareness of wrongdoing, feels behaviour is legitimate and lacks appreciation of consequence of actions. Negates impact of behaviour on others, absence of any understanding of factors influencing behaviour. Denies problem areas (i.e. substance abuse, peers, school, parents).

Stability

0	Individual remains calm in the face of real and imagined slights, insults and disappointments. Responses are in line with usual expectations/reactions given the circumstances.
1	Individuals react to real and imagined slights, insults and disappointments with moderate violence. Reactions, of both negative and positive types appear somewhat exaggerated and overdone. there is

	somewhat unusual inconsistency in action over time.
2	Individual reacts to real and imagined slights, insults, and disappointments with extreme violence. Actions, including ones that seem at least superficially to be responsible ones, appear markedly inconsistent and are often hard to predict.

Note 1: Stability means hour to hour, day to day, or week to week consistency in mood or general demeanor. It refers to the ability to remain composed and directed even when under pressure to act

Treatability

0	Individual responds well to treatment attempts, shows interest in and motivation towards progress, places much effort in therapy, shows good potential for coming close to his/her stated goals.
1	Individual responds to treatment attempts in a generally unenthusiastic manner. complies with treatment regimen, but only minimally and perhaps under protest or with complaints. Places some effort in making progress.
2	Individual responds poorly or not at all to treatment attempts. no motivation or effort is extended. the individual is non-compliant with medication, gives little indication that he will continue with treatment when released into the community. Individual tends not to reach stated goals.

Note 1: Primarily examine this item through treatment progress reports.

Plan Feasibility

0	Individual has adequate community resources to continue to draw upon after completion of the CST program. The individual understands the plan and had a role in developing it. Will participate in programs through other agencies. Family and peers are supportive.
1	Community agencies can provide only partial assistance. family is ambivalent over providing support but shows at least some willingness to assist. Peers provide some support. Unaware of community resources and lack substantial professional support.
2	Community agencies unwilling or unable to provide further support or assistance. The individual has not developed a plan and shows no interest in doing so. no involvement with peers or family. Family is unwilling or unable to help the individual maintain a sense of direction.

Note 1: In most cases you may assume that the plan provided for the client is a continuation of the needs targeted during the CST program. Otherwise look for needs that have not been addressed, reasons for this failure, and referrals to other agencies.

Access

0	The individual is terminated from the program into a controlled environment (e.g., open custody or detention) where access is monitored OR the individual offences have not involved alcohol/drugs, weapons, or victims and these are not likely to be important in new surroundings.
1	The individual is placed in a moderately controlled environment (probation, home with adequate supervision), lives in an area where access is difficult AND the offences involve alcohol/drugs, weapons and/or victims.
2	The individual is placed in an environment where access is made relatively easily and is not monitored (e.g., home with no supervision or living on own) AND the individual stands a good chance of being involve with alcohol, drugs, weapons, and/or victims.

Note 1: Code for propensity based on client's expressed wishes and anticipated future circumstances. Therefore, if client claims they will continue to drink or carry weapons on release regardless of environment code a 2. If they claim that access to drugs is easy or they have many illegal opportunities waiting also code a 2.

Support and Supervision

0	Family, friends and professionals are available and willing to offer assistance and emotional support , as well as financial and physical assistance. Non-criminal activities are modeled and encouraged.
1	Some emotional, financial and physical support is available.
2	Little or no availability of emotional, financial or physical support OR the individual is unwilling to accept support.

Note 1: Determine what services are available and look beyond the good intentions of relatives and friends. Want documentation that they are offering concrete support, if not code '1' minimum.

Compliance

0	The individual is motivated to succeed, willing to comply with authority, and treatment alternatives, and is able to follow rules.
1	Shown some motivation to succeed and willingness to comply with

	treatment. The individual is able to follow rules, but follow-through is not certain.
2	The individual lacks motivation to succeed and willingness to comply with treatment. Actually quits treatment or refuses to participate. The individual refuses to follow rules.

Stress

0	The individual has healthy, well adjusted relatives and friends. School/employment involves little stress. financial difficulties are minimal. well established socially.
1	Conflicts in relationships is moderate. Difficulties finding employment or dealing with course work at school. Illness to self or significant other. Individual has had some difficulties dealing with stress in the past.
2	Interpersonal relationships involve intense conflict. Employment/School involves high degrees of stress. Shortage of money to provide basic needs. Stressful life events. Responds to change poorly and fails to seek assistance in time of need. No coping skills or life skills necessary to deal with day to day stressors.

Note 1: Assess both level of stress likely to occur and ability of the individual to deal with that stress

Clinical Diagnoses Guidelines

Attention Deficit Disorder/Hyperactivity Disorder

Look for direct descriptions from parents, teachers, or psychologists evaluating the youth on these symptoms. Examine deficits according to age appropriate conduct and skills. Code each based on frequency of occurrences

Careful Attention

- Is able to pay attention to details, is meticulous, rarely makes careless errors in school, work or other activities. Look for good grades absence of mistakes during testing, ability to complete long tasks without errors.
- Sometimes fails to pay attention and is prone to errors due to inattentiveness/wonders.
- Often/usually fails to give close attention to details or makes careless mistakes in school, work or other activities.

Sustaining Attention

- Able to complete long and tedious tasks and sustain attention over substantial periods of time.
- Problems sustaining attention in school/work activities. With assistance or reminders can, but not always, complete tasks.
- Often difficulties sustaining attention in tasks or play activities. Look for disruptions in class, switching activities regularly, boredom. Work is messy and rushed. Fails to complete tasks.

Poor Listening Skills

- Listens attentively. Attentive to details of conversation. Can repeat instructions without difficulty.
- Difficulty acquiring attention when speaking to. Does not always appear to listen when speaking to. Several attempts necessary to acquire attention
- Often does not listen when spoken to directly. Starts engaging in other activities while being spoken to. Mind appears elsewhere

Instructions/Finish Work

- Able to complete school-work, chores, and duties with no help or reminders. Completes one task before starting on additional tasks.
- Sometimes is able to finish schoolwork and chores without problems. Reminders usually help
- Often does not follow through on instructions and fails to finish school work, chores, or duties in the workplace. Not due to defiance or failure to understand. Shifts from one uncompleted task to the next. Starts and stops tasks repeatedly. Requests do not help. No direction.

Poor Organization Skills

- Good organizational skills. Can handle several activities at once.
- Becomes bogged down if more than one task, but is persistent
- Often has difficulties organizing tasks and activities. Unable to take on more than one task at a time with any proficiency.

Avoids Sustained Tasks

- Appears to enjoy schoolwork or has interests in activities requiring a sustained mental effort (e.g. chess). Takes on paperwork or tasks with little or no encouragement.
- Sometimes avoids tasks requiring mental effort/needs prompting but typically will participate.
- Avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (e.g. school work, homework). Look for individual quitting tasks requiring sustained effort. Dislikes the mundane.

Loses Necessary Items

- No mention of losing items or careless use of important objects.
- Occasionally loses things or carelessly handles important objects.
- Often loses items necessary for tasks or activities (e.g., schoolwork, toys tools). Materials are often scattered carelessly handled, or damaged. Look for individual damaging important or expensive equipment by careless use.

Easily Distracted

- Can participate in activities despite other ongoing activities. Can not easily be distracted. Can finish activities under pressure.
- Occasionally becomes distracted by extraneous stimuli.
- Easily distracted by irrelevant/extraneous stimuli. Frequently interrupts ongoing tasks to attend to trivial noises or events that are easily ignored by others.

Forgetful

- Is not forgetful. Does not miss appointments or forget essential items. Reliable
- Generally is able to remember important times and is punctual. Occasionally forgetful but does not typically cause problems
- Is often forgetful in daily activities. Misses appointments, forgets lunch or other important things (not due to defiance).

Fidgets

- No problems sitting still and staying relaxed. Calm.
- Can become fidgety, but not typical. Has the ability to sit still if required
- Fidgets with hands or feet or squirms in seat. Unable to sit still. Physically moves around excessively even when staying in the same spot. Excessive use of hands. Not a feeling but physical movement required.

Can Not Remain Seated

- No problems in keeping seated. Socially appropriate.
- Sometimes difficulty in keeping seated. Difficulty tends to disappear if socially inappropriate.
- Often leaves seat in classroom or other situation when remaining seated is expected. Difficulties detaining

Active When Inappropriate

- Only displays outward energy in socially appropriate context.
- Restless occasionally in the classroom at home or in the community
- Often runs around or climbs excessively in situations in which it is inappropriate (can use subjective feelings of restlessness).

Difficult Playing Quietly

- Has no noted difficulties engaging in leisure activities quietly
- sometimes is unable to participate in leisure activities quietly, sometimes disturbs others.
- Often has difficulties engaging in leisure activities quietly. Is disruptive to others while they participate in group activities. Makes a lot of noise

On the Go

- Is calm and relaxed. Lethargic, inactive, sluggish or lazy.
- Sometime appears restless or energetic but typically does not impair functioning or interfere with activities.
- Often on the go or acts as if driven by a motor. Can never settle down. Restless and an abundance of energy.

Talks Excessively

- Good communication skills, shy, quiet, or withdrawn
- Is chatty but not excessively.
- Talks excessively, beyond that which is required to communicate. Dominates others by talking. Extrovert socially.

Blurts Out Answers

- Can delay responses until appropriate.
- Sometimes difficulty speaking out of turn.
- Often blurts out answers before questions have been completed. Is punished or reprimanded for speaking out of turn. Can not delay responses. Disruptive in a classroom setting by speaking out. Does usually refrain from stating what thinking.

Impatient Waiting Turn

- Patient, diligent, and composed. Typically is well mannered and respectful of others. Able to control impulses.
- Sometimes behaviour suggests impatience.
- Often has difficulties waiting turn. Impatient and acts without considering consequences (impulsive). Demanding of others and little consideration for social considerations.

Interrupts/Intrudes on Others

- Good social skills or well mannered
- Sometimes interrupts but not persistently.
- Interrupts or intruded on others in social, academic, or occupational setting. Persistent in talking out of turn and intrudes on others games/activities. May be bossy.

EXCLUSION CRITERIA

ENTRY	LABEL	DESCRIPTION/CODING
YES/NO	Symptoms before 7	Indicate whether any of the above symptoms

		were present before the age of 7.
YES/NO	Impairment in two settings	Only indicate if symptoms are present at either school, home, treatment, recreational and/or community setting but not just one

Conduct Disorder

LABEL		DESCRIPTION
Bullies/threatens		Bullies, threatens or intimidates others.
Initiates physical fights		Has started physical fights with others
Uses Weapons		Has used a weapon that can cause serious injury (gun, knife, bat, bottle)
Physically cruel		Has physically cruel to people, engaged in sadistic behaviour, or humiliated others
Cruel to animals		Has been physically cruel to animals
Stolen/confronts victim		Stolen while confronting the victim (e.g., mugging, robbery, extortion)
Forced sexual activity		Forced someone into unwanted sexual activity
Fire setting		Deliberately engaged in firesetting with the intention of causing serious damage
Vandalism		Deliberately destroyed others' property (not including arson)
Break Ins		Has broken into someone else's house, car, or building
Lies/manipulative		Lies to obtain goods or favours or to avoid obligation ("cons" others)
Stolen - no confrontation		Stolen times of non-trivial value without confronting the victim (e.g., shoplifting, forgery)
Stays out at night		Stays out at night despite parental/guardian prohibitions, beginning before age 13
Runs away from home		Run away from home overnight while living in parental or parental surrogate home. Code as 2 if once but for over 1 month.
Truant from school		Truant from school beginning before age 13.
ENTRY	LABEL	DESCRIPTION/CODING
YES/NO	Symptoms before 10	Indicate whether any of the above symptoms were present before the age of 10.

Oppositional Defiant

Temper

- Good impulse control, high frustration tolerance
- Some suggestions or evidence of an inability to control anger. Not pervasive
- Loses temper frequently, temper tantrums. Repeated physical and verbal assaults.

Argues With Adults

- Rarely questions adults or is involved in debates or arguments. Quiet and compliant. Follows directions without questions.
- Infrequent verbal sparring with adults. Only if to serve some higher purpose.
- Engages in verbal disputes with adults on a regular basis. Seems to enjoy arguing. Arguing seems to have a value in itself. Continuously questions rules and power of authority. Will not compromise.

Refuses Adults Requests

- Rarely defies an order or request by an adult in a position of authority. Usually compliant and/or submissive to authority.
- Occasionally refuses a request but not characteristic.
- Will not listen to even simple requests by adults. Will not behave or follow instructions. Is defiant to authority. Refuses to be cooperative even if in own's best interest. Stubborn. Tests limits of behaviour.

Deliberately Annoys

- Is not annoying. Is likable and generally pleasant to others
- Some evidence to suggest this individual engages in behaviour with the purpose of annoying others.
- Deliberately annoys other people (makes noise, leaves a mess). Some value of making a nuisance of oneself. Bullies and bothers to excess.

Blames Others

- Does not use excessive rationalizations or justification for behaviour
- Some minimizations present but not excess. Takes some responsibility or attempts to address areas that have been problematic in past
- Blames others for their mistakes or misbehaviour. Uses a variety of minimization or neutralization techniques. Fails to take responsibility for behaviour.

Easily Annoyed

- Not easily annoyed. Interacts well with others. Has a variety of friends.
- Some evidence of failure to get along with others.
- Touchy and easily annoyed by others. Often irritable and oversensitive. Takes things personally and not receptive to criticism or change. Intolerant or racist. Hothead. Frustration shows easily and frequently.

Angry and Resentful

- Rarely angry, generally happy and content. Deals with anger well. Does not dwell on failures.
- Evidence of anger problems.
- Angry and resentful. Holds grudges. In foul moods much of the time. Bitter about previous failures. Anger persists over long periods of time, inclined to brood. Cynical/hostile.

Spiteful and Vindictive

- Friendly, generous and forgiving.
- Sometimes seeks retribution or revenge but limited affect.
- Spiteful and vindictive. Hateful towards others. Will act maliciously towards undeserving individual because of perceived slights. May adhere to an inmate code. Needs to act on.

CST RECIDIVISM MANUAL

General guidelines: Looking for any indication of criminal activity after the termination date.
Unless otherwise specified recidivism includes only convictions as an adult or juvenile.

VARIABLE NAME	DESCRIPTION	CODE
INFO	Indicate whether there is recidivism data available on this subject.	Y = Yes N = No
RECIDIVISM	Indicate if the subject has been convicted of an offence in juvenile OR adult court	Y = Yes N = No
JUVENILE RECID	Indicate if the subject has been convicted of an offence in juvenile court	Y = Yes N = No
ADULT RECID	Indicate if the subject has been convicted of an offence in adult court	Y = Yes N = No
The following section pertains only to juvenile recidivism data. Charges and convictions that were dealt with in juvenile court.		
JUV FIRST CONVICTION	Indicate the date that the subject had his/her first conviction after termination as a juvenile	Date (mmm-dd-yy)
JUV FIRST VIOLENT	Indicate the date that the subject had his/her first conviction for a violent offence as a juvenile	Date (mmm-dd-yy)
JUV LONGEST SENTENCE	Indicate the number of months of the longest sentence after termination in youth court. Add open to secure (e.g. 2 months secure followed by 6 open = 8)	Number of months (round to nearest quarter)
JUV TOTAL OPEN	Number of months served in open custody	Number of months (round to nearest quarter)
JUV TOTAL SECURE	Number of months served in secure custody	Number of months (round to nearest quarter)
JUV SENTENCES	Number of separate custody terms as a juvenile	
JUV MURDER	Number of convictions for murder/manslaughter and	

	attempt murder	
JUV SERIOUS ASSAULT	Number of convictions for Serious assaults including ACBH, assault with weapon, Aggravated assault, forcible confinement	
JUV COM ASSAULT	Number of convictions for common assaults including: assault, assault police, threats	
JUV ROBBERY	Number of convictions for robbery, armed robbery, robbery and with violence	
JUV WEAPON	Number of convictions for possession or use of a weapon including: use of firearm, carry concealed, possession	
JUV SEXUAL	Number of convictions for sexually related crime	
JUV PROPERTY	Number of convictions for property related crimes including: theft, B&E, possession	
JUV BREACH	Number of convictions for breach including: fail to appear, breach of probation or bail, fail to comply	
JUV UAL/ESCAPE	Number of convictions for UAL or Escape from any facility	
JUV DRUG	Number of convictions for drug related activity	
JUV FRAUD	Number of convictions for fraud, personation, forgery, use of stolen credit card	
JUV DRIVING	Number of convictions for driving related charges	
JUV MISC	Number of convictions for mischief, willful damage or others not already accounted for	
NUMBER OF VIOLENT CHARGES	Number of CHARGES (not convictions) for violent crimes (include assaults, robbery, sexual, threats, and any USE of a weapon)	
	The following section pertains only to adult recidivism data. Charges and convictions that were dealt with in adult court	

ADULT FIRST CONVICTION	Indicate the date that the subject had his/her first conviction after termination in an adult court	Date (mmm-dd-yy)
ADULT FIRST VIOLENT	Indicate the date that the subject had his/her first conviction for a violent offence in an adult court	Date (mmm-dd-yy)
ADULT TOTAL TIME	Number of total months sentenced to custody (not served)	Number of months (round to nearest quarter)
ADULT LONGEST SENTENCE	Indicate the number of months of the longest total aggregate sentence as an adult	Number of months (round to nearest quarter)
ADULT SENTENCES	Number of separate custody terms	

ADULT MURDER	Number of convictions for murder/manslaughter and attempt murder
ADULT SERIOUS ASSAULT	Number of convictions for Serious assaults including ACBH, assault with weapon, Aggravated assault, forcible confinement
ADULT COMMON ASSAULT	Number of convictions for common assaults including: assault, assault police, threats
ADULT ROBBERY	Number of convictions for robbery, armed robbery, robbery and with violence
ADULT WEAPON	Number of convictions for possession or use of a weapon including: use of firearm, carry concealed, possession
ADULT SEXUAL	Number of convictions for sexually related crime
ADULT PROPERTY	Number of convictions for property related crimes including: theft, B&E, possession
ADULT BREACH	Number of convictions for breach including: fail to appear, breach of probation or bail, fail to comply
ADULT UAL/ESCAPE	Number of convictions for UAL or Escape from any facility
ADULT DRUG	Number of convictions for drug related activity
ADULT FRAUD	Number of convictions for fraud, personation, forgery, use of stolen credit card
ADULT DRIVING	Number of convictions for driving related charges
ADULT MISC	Number of convictions for mischief, willful damage or others not already accounted for
NUMBER OF VIOLENT CHARGES	Number of CHARGES (not convictions) for violent crimes (include assaults, robbery, sexual, threats, and any USE of a weapon)

Appendix B

THE YOUTH LEVEL OF SERVICE/CASE MANAGEMENT INVENTORY

1. Criminal History

- a. ☐ Three (3) or more prior convictions
- b. ☐ Two (2) or more prior failures to comply
- c. ☐ Prior probation
- d. ☐ Prior custody
- e. ☐ Three (3) or more current convictions

2. Family Circumstances

- a. ☐ Inadequate supervision
- b. ☐ Difficulty in controlling behaviour
- c. ☐ Inappropriate discipline
- d. ☐ Inconsistent parenting
- e. ☐ Poor relationship/father-youth
- f. ☐ Poor relationship/mother-youth

3. Education/Employment

- a. ☐ Disruptive classroom behaviour
- b. ☐ Disruptive behaviour on school property
- c. ☐ Low achievement
- d. ☐ Problems with peers
- e. ☐ Problems with teachers
- f. ☐ Truancy
- g. ☐ Unemployed/not seeking employment

4. Peer Relations

- a. ☐ Some delinquent acquaintances
- b. ☐ Some delinquent friends
- c. ☐ No or few positive acquaintances
- d. ☐ No or few positive friends

5. Substance Abuse

- a. ☐ Occasional drug use
- b. ☐ Chronic drug use
- c. ☐ Chronic alcohol abuse
- d. ☐ Substance abuse interferes with life
- e. ☐ Substance use linked to offence

6. Leisure/Recreation

- a. ☐ Limited organized activities
- b. ☐ Could make better use of time
- c. ☐ No personal interests

7. Personality/Behavior

- a. ☐ Inflated self-esteem
- b. ☐ Physically aggressive
- c. ☐ Tantrums
- d. ☐ Short attention span
- e. ☐ Poor frustration tolerance
- f. ☐ Inadequate guilt feelings
- g. ☐ Verbally aggressive, impudent

8. Attitudes/Orientation

- a. ☐ Pro-criminal attitudes
- b. ☐ Not seeking help
- c. ☐ Actively rejecting help
- d. ☐ Defies authority
- e. ☐ Callous, little concern for others

Special youth considerations

- 1 ☐ Low intelligence/developmental delay
- 2 ☐ Learning disability
- 3 ☐ Underachievement
- 4 ☐ Problem solving skills
- 5 ☐ Victim of physical/sexual abuse
- 6 ☐ Victim of neglect
- 7 ☐ Shy/withdrawn
- 8 ☐ Peers outside age range
- 9 ☐ Depressed
- 10 ☐ Low self-esteem
- 11 ☐ Inappropriate sexual activity
- 12 ☐ Racist/sexist attitudes
- 13 ☐ Poor social skills
- 14 ☐ Suicide attempts

Special family considerations

- 1 ☐ Family chronic offending
- 2 ☐ Family emotional distress/psychiatric
- 3 ☐ Family drug-alcohol abuse
- 4 ☐ Marital conflict
- 5 ☐ Financial/accommodation problems
- 6 ☐ Uncooperative parents
- 7 ☐ Cultural/Ethnic issues
- 8 ☐ Abusive father
- 9 ☐ Abusive mother
- 10 ☐ Family trauma

Adapted from Hoge & Andrews, 1999

SCORING KEY

PART I: ASSESSMENT OF RISK AND NEEDS

**NOTE: THE WORDING OF ITEMS IN THIS SECTION
MAY HAVE TO BE MODIFIED TO REFLECT
CURRENT STUDY CONSIDERATIONS; CHANGES HAVE BEEN BOLDED
OTHERWISE ITEMS SHOULD REMAIN THE SAME**

1. Prior and Current Offences/Dispositions

- a. 3 or more prior convictions: check this item if the youth has had 3 or more convictions prior to the convictions that are currently being dealt with.

- Do not include current offense or collateral offenses.
- Remember that it refers to set(s) of convictions at different time intervals. If several offenses occurred at the same time, write them down, but only count the set of offenses as one. You are looking for crime sprees. Remember that it refers to set(s) of convictions at different time intervals.
- Do not count diversion and/or continuance for dismissal.
- Do not count petty traffic offenses (speeding, over center line, etc.)

- b. 2 or more prior failures to comply: these include failures to appear; probation/parole violation; escape from custody; failure to comply with alternative measures; unlawfully at large

- Mark if charges filed or probation/parole was suspended under community supervision.

- Community supervision is probation, parole, residential placement, mandatory supervision (even if unsupervised), and release on bail/bond community service order, work release, and mandatory supervision.
- Score as "Yes", if the person violated supervision, even if a formal report of violation was not completed. The key is whether the violation was serious enough to warrant a report. (Example, new offense, but offender agrees to go to inpatient treatment, so a report of violation is not filed.)

c. prior probation: check if the youth has ever been on probation.

- Unsupervised probations counts here
- Do not count status offenses unless they have been adjudicated delinquent as a result of three prior status offenses.
- Do not include probation for minor traffic offenses
- Current offenses they are on probation for do not count. If a prior probation case has been closed these count

d. prior custody: check if the youth has ever spent time in a custody facility **as a result of a criminal conviction**. Custody; does not include pretrial detention **unless that later becomes part of his/her sentence (i.e., time served)**.

- A residential facility is not counted unless the person is **there as a result of a sentencing placement**.
- Count juvenile placements that are a result of a delinquency petition only (not those made for child's welfare.)

e. 3 or more current convictions: the youth has received three or more convictions **as a part of the current disposition(s)**.

- Does the client have three or more charges for which he/she has been adjudicated and is presently serving the disposition in the community or in an institution.
- There is no accounting for outstanding charges on the YLS/CMI.
- Do not count pending or dropped charges.

- If assessed during pre-sentence, count the number of offenses that they have plead guilty to and if applicable, the offenses that they are under supervision for currently. If it is a pre plea PDI, you can circle this item if you are unsure as to the number of offenses for which the offender will be supervised.
- If several offenses occurred at the same time, write them down, but only count the set of offenses as one. You are looking for crime sprees. Remember that it refers to set(s) of convictions at different time intervals.

**NOTE: ITEMS IN SECTIONS 2 – 8 GENERALLY APPLY TO THE
YOUTH'S CURRENT SITUATION OR CONDITIONS
PRESENT DURING THE PAST YEAR**

2. Family Circumstances/Parenting

- a. inadequate supervision: parents leave the youth unattended, are not aware of activities of the youth, leaves youth unsupervised without youth knowing how to reach the parent, or, in your judgment, otherwise exercises inadequate supervision of the youth;. Also check if youth living independently without supervision.
- b. difficulty in controlling behaviour: parents have problems in exercising control over the youth's behavior; youth disobeys parental instructions, is out of control. Also check is youth is living independently and behavior is not controlled.
- c. inappropriate discipline: there is an excessive use of corporal punishment; frequent use of yelling and threats; overly strict rules; or otherwise poor disciplinary practices on the part of the parent(s). Also check if parenting is overly permissive, with no effort at providing direction.
- d. inconsistent parenting: the parent(s) are inconsistent in application of rules or in the use of punishment/rewards; periods of harsh discipline may alternate with periods of neglect or

extreme permissiveness. Check if parent cannot form (or articulate) clear rules regarding homework, curfews, friends, etc.

e. poor relationship/father-youth: there is a particularly poor relationship (e.g., hostile, alienated, uncaring) between the youth and father or stepfather. Youth does not have to be living with father/step-father to rate this item. In cases where there is a natural father and stepfather, evaluate for the most prominent relationship over the past year. If father or stepfather is deceased, check this item if poor relationship continues to be an issue. **Check if there is no relationship with a father figure.**

- Rate for relationship with father or father figure with whom client has most frequent contact.
- The client argues with his/her father when they are together and/or rarely sees or writes them. The relationship ranges from dislike to hatred and the client does not care what his/her parents think, feel or expect.
- Significant conflicts; dissatisfaction and/or indifference regarding the relationship.

e. poor relationship/mother-youth: there is a particularly poor relationship (e.g., hostile, alienated, uncaring) between youth and mother or stepmother. Youth does not have to be living with mother/step-mother to rate this item. In cases where there is a natural mother and stepmother, evaluate for the most prominent relationship over the past year. If mother or stepmother is deceased, check this item if poor relationship continues to be an issue. **Check if there is no relationship with a mother figure.**

- Rate for relationship with mother or mother figure with whom client has most frequent contact.

- The client argues with his/her mother when they are together and/or rarely sees or writes them. The relationship ranges from dislike to hatred and the client does not care what his/her parents think, feel or expect.
- Significant conflicts; dissatisfaction and/or indifference regarding the relationship.

3. Education/Employment

a. disruptive school building behaviour: youth is engaged in acting-out, attention-seeking, defiant, or other disruptive behaviors within the school building; considered problem by teachers and other school staff in the classroom.

b. disruptive schoolyard behaviour: the youth is initiating aggressive or violent actions or is otherwise engaging in misconduct on school property outside classroom setting; may include criminal activities such as theft, vandalism, drug/alcohol use.

c. low achievement: the youth is currently failing a subject or there are other indications of achievement problems. If the youth is performing at their expected level and is getting low grades this item should not be marked.

d. problems with peer relations: there is evidence that the youth is disliked, isolated, withdrawn, or there is other evidence of poor relations with peers in the school setting.

Difficulties sustaining or maintaining friendships. Social adjustment concerns expressed.

e. problems with teacher relations: there is evidence of significant and continuing problems between youth and teacher; youth hates teachers or is hostile toward them.

f. truancy: youth is currently missing school days or skipping classes without legitimate excuses. **Look for excessive truancy versus an occasional missed class. Is academic functioning suffering because of missed classes or is this coming to the attention of school authorities?**

g. unemployed/not seeking employment: youth should have a job or be engaged in employment related activities (e.g., actively seeking work, engaged in employment training or work schemes), but is not.

4. Peer Relations

a. some delinquent acquaintances: some of the youth's acquaintances/casual friends **in the community** are known offenders or exhibit antisocial **orientations**.

- Score if the client associates with (or did associate with prior to detention and/or placement) individuals who are not close friends, but have criminal records or are involved in criminal activity.
- Focus this question on individuals with whom the offender has some ongoing contact or association with over time but who are not considered friends (other students, co-workers, people in the neighborhood, organizations, other inmates).
- Count criminal behavior or an environment supportive of crime.
- If the offender has co-defendants, this item needs to be scored. ***Must also score, if the offender is in a residential facility or institution (removed as scoring in current study).***
- For acquaintances or friends that have criminal records but are now clearly pro-social and stable (such as an AA or NA sponsor with several years of sobriety), do not count as a criminal.
- If the individual is convicted of a drug offense, then they must know other criminals to get the drugs. The exception is the abuse of prescription drugs. An individual would have to have been using drugs or incarcerated (including pretrial detention) within the last year to apply this guideline.
- For acquaintances, one or two meetings with them are sufficient to score.

- An individual who obtained his drugs and used with relatives only should be scored on this.
- b. some delinquent friends: some of the youth's close friends are known offenders or exhibit antisocial attitudes.
- Score if the client has friends (or did prior to detention) who have criminal records or are involved in criminal activity. Friends are associates with whom one spends leisure time, whose opinions are valued, who provide help when in difficulty, etc.
 - If this item is marked yes then item 3b must be marked yes also.
- c. no or few positive acquaintances: youth has no or very few acquaintances/casual friends who represent positive role models (e.g., doing well in school; not into crime, alcohol or drugs).
- Scored as a risk factor, if few (less than 20%) of acquaintances are pro-social. Need at least two pro-social acquaintances to not score, regardless of percentage.
 - Do not score if the offender spends time with these people and respects their opinion and does not engage in antisocial behavior when with them.
- d. no or few positive friends: youth has no or very few close friends who represent positive role models (e.g., doing well in school; not into crime, alcohol, or drugs).
- Count only if their friends have not been involved in criminal activity for one year or longer. Friends that have never been in trouble need to be an active part of the offender's life and in order to score this question. Friends that have not been in trouble should be at least 20% of the total number of friends (and need at least 2 of them.)
 - Do not score if the offender spends significant time with them and does not engage in antisocial behavior when with them.
 - If this item is marked yes then item 4c must be marked yes also.

5. Substance Abuse

- a. occasional drug use: there is evidence that the youth is an occasional user of an illicit drug.
- b. chronic drug use: there is evidence that the youth is a regular user of an illicit drug.
 - Using twice per week or more in the past 12 months and/or problems in any one major life area: related arrests; employment or education problems; contacts with medical facilities for drug problems; withdrawal symptoms; personality changes; family or social problems; or recent diagnosis of “Drug Abuse” or “dependence”. Consider the offender who is worried about relapse.
 - If this item is marked yes then item 5a must be marked yes also.
- c. chronic alcohol use: the youth regularly consumes alcoholic beverages.
 - Drinking more than three times per week and problems in more than one major life area, such as: passing out; blacking out; drinking related arrests; employment or education problems; contacts with medical facilities for drinking-related problems; withdrawal symptoms; personality changes; family or social problems; or recent diagnosis of Alcohol Dependence. Consider the client who is worried about relapse.
- d. substance use interferes with functioning: drug and/or alcohol use affects the youth’s physical or social functioning. **Not scored if it is just associated with antisocial activity.** May involve interference with schoolwork or job, tensions with parents, loss of friends, accidents, etc.
- e. substance use linked with offences: there is reason to believe that the youth’s criminal activity is related to drug or alcohol use.
 - **Score as risk factor if the use of alcohol or drugs and their intoxicating effects have contributed to violations of the law.**

- **Score if crimes have been committed in order to acquire funds to support alcohol or drug use. Examples: trafficking in drugs to support a habit; breaking and entering and thefts of property to fence for money for drugs.**
- Users are cautioned against assuming that a drug trafficker should always be scored on this item. Some drug traffickers see their activity as a “business” and do not use drugs themselves. It is the abuse of substances leading to law violations that is important.

6. Leisure/Recreation

a. limited organized participation: there is no evidence that the youth participates in sports, clubs, or other types of organized **prosocial** activities.

- **Consider non-involvement in sports leagues, school extracurricular activities, church, volunteering, clubs and social organizations, and community centres. The important feature is whether involvement is seen as likely to facilitate prosocial relations and commitment to prosocial institutions.**

b. could make better use of time: the youth spends too much time in passive or unconstructive activities (e.g., watching TV or videos, playing video games, partying, hanging around).

- At this level, the client has no leisure activities and is bored during most of his/her idle time. **Most free time is spent “hanging out”.**
- Individual is involved in at least a couple different recreational activities, but involvement is inconsistent or not entirely rewarding. Could use some assistance in planning the activities or finding some that are more satisfying.

c. no personal interests: the youth appears to have no personal interests of a positive nature (e.g., sports, reading, hobbies). They must be participating in their interests in order for this item not to be checked.

7. Personality/Behaviour

a. inflated self-esteem: youth thinks he/she is superior to others; brags constantly; feeling of self-worth seems to exceed accomplishments.

- **Look for specific indications of bravado, lofty goals and expectation, criticisms or feelings that he/she should be treated in special regard. Be cynical of assessments suggesting bravado is covering for poor self-esteem.**

b. physically aggressive: youth initiates acts of physical aggression against others; starts fights; has engaged in violent actions. Youth believes physical aggression is an appropriate way of expressing oneself and dealing with others. Physical aggression is directed towards a person.

d. tantrums: youth displays acts of temper; loses control when frustrated or angry. Tantrums are directed toward objects.

d. short attention span: youth has difficulty attending to the task at hand; difficulty completing tasks; is hyperactive.

e. poor frustration tolerance: youth deals poorly with frustration; loses patience easily; tends to act impulsively.

f. inadequate guilt feelings: youth feels no remorse when his or her behaviour has caused harm to another; does not accept responsibility for actions, offers excuses. Refers to their feelings about their actions. Do not confuse this as being the same as item 8e.

g. verbally aggressive: youth is often verbally abusive in dealing with others; uses language in hostile or threatening manner.

8. Attitudes/Orientation

a. antisocial/procriminal attitudes: the youth's attitudes are supportive of a criminal or anti-conventional life style; consider attitudes, values, beliefs and rationalizations concerning the crime and victim; youth does not think social rules and laws apply to her/him.

- The client places an emphasis on the usefulness of criminal activity. His/her motives are more readily served by crime than by non-crime. The client expresses acceptance of the common rationalizations or justifications for law violations (e.g., "It wasn't my fault." "No one was hurt." "The victim had it coming to him." "The cops were always on me for something."). He/she denies or minimizes responsibility for his/her actions and their consequences. *The client expresses outright rejection of, or fails to empathize or be sensitive to, the feelings, wishes and expectation of others, including the victims of criminal behavior (removed; empathy-).* He/she accepts criminal others and their values and activities **or** expresses hostility toward the criminal justice system.
- At this level, the client has a generalized disregard for conventional/non-crime alternatives. He/she is non-supportive, hostile and rejects the underlying values of society. The client has weak ties to conventional settings such as home and family, and school and work and is negative, hostile and rejecting of non-criminal others ("I don't care what they think."). He/she invalidates or rejects non-criminal activities and their rewards and has a tolerance for deviance in general.
- Individual has a selective disregard for conventional/non-crime alternatives. The individual is supportive of some pro-social activities (e.g., school, work, etc.), but is also supportive of specific criminal behaviors (e.g., drug use, battering, macho violence in general, etc.) Some hostility towards government, business, etc. is present.

b. not seeking help: youth is not seeking help; is reluctant to seek needed interventions; does not recognize the need for help.

c. actively rejecting help: youth is actively resisting the interventions of helping persons or agencies.

- d. defies authority: youth refuses to follow directions from parents, teachers or other authority figures; youth is hostile to the criminal justice system.

- e. callous, little concern for others: youth shows little concern for the feelings or welfare of others. This individual would tend to look more like a psychopath.

SCORING KEY

PART III: ASSESSMENT OF OTHER NEEDS/SPECIAL CONSIDERATIONS

SCORING KEY

PART III: ASSESSMENT OF OTHER NEEDS/SPECIAL CONSIDERATIONS

1. Family/Parents

(Note: parent may also refer to legal guardians)

- a. chronic history of crime: youth's parents are now or have in the past engaged in repeated or serious criminal acts.
- b. emotional distress/psychiatric: either or both parents have a current psychiatric disability or a recent history of such problems.
- c. drug-alcohol abuse: either or both parents have current substance abuse problem or a recent history of such a problem.
- d. marital conflict: the parents are currently in conflict or have recently experienced conflict.
- e. financial/accommodation problems: the family is currently facing a financial and/or housing problem.
- f. uncooperative parent(s): parent(s) unwilling to cooperate in efforts to address the youth's problems.
- g. cultural/ethnic issues: the family is facing difficulties or conflicts relating to cultural/ethnic/religious adjustment.
- h. abusive father: the father has engaged in physical, emotional, or sexual abuse of a family member.
- i. abusive mother: the mother has engaged in physical, emotional, or sexual abuse of a family member.

- j. significant family trauma: this may relate to death or illness in the family, family break-up, or similar type of crisis.

2. Youth

- a. health problems: the youth is currently suffering from a medical problem.
- b. physical disability: the youth suffers from a disabling physical condition.
- c. low intelligence/developmental delay: youth exhibits obvious intellectual deficits.
- d. learning disability: while of normal intelligence, the youth has difficulty doing academic work. **Specific identification from educational assessment or school authority required.**
- e. underachievement: **the youth has been assessed as high average or above normal intelligence and is currently performing below capacity. The youth needs to have shown at some point in the past superior academic performance or exceptional skills in some area.**
- f. problem solving skills: youth has difficulty in resolving personal/social problems; does not cope well in interpersonal situations.
- g. victim of physical/sexual abuse: the youth is currently or has in the past experienced physical or sexual abuse.
- h. victim of neglect: youth is experiencing or has in the past experienced neglect.
- i. shy/withdrawn: youth lacks significant relationships with others; does not appear motivated to form relationships.
- j. peers outside age range: youth spends a lot of time with significantly **older** youths.
- k. depressed: the youth appears to be in a depressed state.
- l. low self-esteem: youth has little feeling of self-worth; poor self-concept.

- m. inappropriate sexual activity: the youth engages in illegal or otherwise inappropriate sexual activities (e.g., prostitution, exhibitionism).
- n. racist/sexist attitudes: youth expresses antisocial attitudes regarding women or members of ethnic or religious groups.
- o. poor social skills: **the youth appears to function poorly in social situations; lacks normal social skill development. Look for a history of inadequate social development.**
- p. engages in denial: youth seems unable to admit guilt; unable to admit to problems.
- q. suicide attempts: history of suicide attempts.
- r. diagnosis of psychosis: youth has been diagnosed as psychotic or other serious psychiatric condition.
- s. third party threat: youth is threatened by third party.
- t. history of sexual/physical assault: youth has a history of directing sexual or physical assaults against others.
- u. history of assault on authority figures: youth has a history of violent assaults on teachers, parents, corrections personnel, or other authority figures.
- v. history of weapon use: youth has a history of using any type of weapon (**includes threats or intimidation**)
- w. history of fire setting: youth has a history of arson or arson attempts.
- x. history of escapes: youth has history of escapes or attempted escapes from custody facilities.
- y. protection issues: child welfare or other protection agencies are involved with the youth.
- z. adverse living conditions: youth is living on the street or otherwise inappropriately housed.

Appendix C

PCL:YV Scoring Sheet

Name:	Client Number:
DOB:	Date of Coding:

1.	Glibness/Superficial Charm _____ _____ _____	0.....1.....2.....Omit
2.	Grandiose Sense of Self Worth _____ _____ _____	0.....1.....2.....Omit
3.	Need for Stimulation/Proneness to Boredom _____ _____ _____	0.....1.....2.....Omit
4.	Pathological Lying _____ _____ _____	0.....1.....2.....Omit
5.	Conning/Manipulative _____ _____ _____	0.....1.....2.....Omit
6.	Lack of Remorse or Guilt _____ _____ _____	0.....1.....2.....Omit
7.	Shallow Affect _____ _____ _____	0.....1.....2.....Omit

8.	Callous/Lack of Empathy_____	0.....1.....2.....Omit

9.	Parasitic Lifestyle_____	0.....1.....2.....Omit

10.	Poor Behavioural Problems_____	0.....1.....2.....Omit

11.	Promiscuous Sexual Behaviour_____	0.....1.....2.....Omit

12.	Early Behavioural Problems_____	0.....1.....2.....Omit

13.	Lack of Realistic, Long Term Goals_____	0.....1.....2.....Omit

14.	Impulsivity_____	0.....1.....2.....Omit

15.	Irresponsibility_____	0.....1.....2.....Omit

16.	Failure to Accept Responsibility for Own Actions_____	0.....1.....2.....Omit

17.	Interpersonal Relationships_____	0.....1.....2.....Omit

18.	Juvenile Delinquency_____	0.....1.....2.....Omit

19.	Revocation of Conditional Release_____	0.....1.....2.....Omit

20.	Criminal Versatility_____	0.....1.....2.....Omit

Factor 1 Raw Score: _____	Omits: _____	Factor 1 Score: _____
Factor 2 Raw Score: _____	Omits: _____	Factor 2 Score: _____
Total Raw Score: _____	Omits: _____	Total Score: [_____]

Appendix D

CHILD AND ADOLESCENT TAXON SCALE

Name:	FPS #:	Date:
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Options	Item Scoring	Score	Qualifier
1. Arrested before age 13			Age at first arrest
0	No		
2	Yes		
2. Living with parents until age 16			Age separated
0	Yes (or death of one parent)		
2	No (separation, divorce, abandonment, institutionalization; more than 1 month)		
3. Childhood Aggression rating			
0	No fights		
1	Some fights		
2	A lot of fights		
4. Childhood behaviour problems			Number of CD
0	Zero or four conduct disorder criteria		
1	Five or six conduct disorder criteria		
2	Seven or more conduct disorder criteria		
5. Elementary school problems			
0	No discipline/attendance problems		
1	Some problems		
2	Serious problems		
6. School suspension or expulsion			Total
0	No		
2	Yes		
7. Teenage alcohol abuse			
0	No problems		
1	Minor problems		
2	Serious problems		
8. Parent alcohol abuse			
0	No		
2	Yes		

(adapted from Quinsey et al., 1998)