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Gender Differences in Mental Health Needs and Recidivism in a Sample of Adolescent Offenders

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Abstract

The present study investigated gender differences in mental health needs and correlates of recidivism in a sample of court-referred youths in Thunder Bay, Ontario. Archival data, consisting of mental health assessments used to assist dispositional proceedings and recidivism data collected from 1996 to 2000, was examined in an exploratory fashion that was aided, in part, by prior empirical literature and relevant theoretical constructs. The analyses of historical information and behaviour checkists suggest that gender-specific mental health needs do exist in adolescents committing crimes. Female youths were reported as experiencing more internalizing and externalizing problems than the males. In addition, significantly more of the females were exposed to maltreatment, compared to the male youths. Although overall survival distributions of recidivism did not differ significantly by gender, there were differences in the risk factors for recidivism for male and female youths. It was found that poor mother-child relationship, poor parental management and substance abuse problems significantly influenced recidivism in males, while internalizing problems influenced female recidivism. While limitations of the current study are acknowledged, the findings, to some extent, reconcile some of the discrepancies and ambiguities in the literature. Important directions for future research are also discussed.

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I would like to dedicate this thesis to my family. To my parents, for inspiring me with their hard work and sacrifice. And to my brother, Sukhjeevan for believing in me and for continuing to show me that you can go much further than you think is possible.

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In Canada, 12- to 17-year old adolescents are responsible for about 23% of all Criminal Code offenses (Stevenson, Tufts, Hendrick & Kowalski, 1998). It is estimated that by the year 2006, crimes committed by adolescents aged 15 to 19 will increase by 9.4% (Stevenson et. al., 1998). The reduction and prevention of adolescent crime are important concerns for society. By studying and deconstructing the profile of the adolescent offender, specific interventions which can impact the youth's criminal behaviour and mental health can be implemented. Learning how to identify adolescents at high-risk for offending and assessing their respective treatment needs are prime objectives in not only decreasing adolescent crime, but also in improving the well being of this population.

In his discussion of assessments for youths committing crimes, Hoge (2002) identifies criminogenic risk, criminogenic need, protective factors and responsivity to intervention as central in informing decisions regarding disposition and treatment. In particular, he distinguishes risk and need as two of the "most important" factors to address in the youth's assessment. Criminogenic risk provides a prediction of future criminal behaviour, while criminogenic needs are factors that are amenable to change and often necessitate intervention. The constructs of risk and need are frequently the basis for widely used assessment measures for youths that have committed crimes, such as the Youth Level of Service/Case Management Inventory (YLS-CMI). The YLS-CMI contains a broad spectrum of potential correlates spanning from the adolescent's developmental history to their current criminal behaviour. Hence, the assessment of risk and need adopts a widespread and multi-dimensional perspective on delinquency. While a thorough

examination of variables in research is stressed, the generalizability of the research is limited since the participants for these studies have been predominantly male.

In their review of theory and research on delinquency, Hoyt and Scherer (1998) have extended the idea of a "comprehensive and multisystemic" investigation to the study of female adolescent offending. In particular, they propose a categorical model, which includes examining specific correlates related to the physical and social environments of female youths. The studies included in the review examined variables relating, principally, to the individual (e.g. sexual abuse, mental health), social context (e.g. family and peer influences) and larger environment (e.g. socioeconomic status). Several other researchers have also supported the examination of these domains in relation to the areas of female delinquency (Quinsey, Skilling, Lalumiere & Craig, 2004; Bloom, Owen, Deschenes & Rosenbaum, 2002; Reitsma-Street & Artz, 2000), as well as adolescent female aggression (Odgers & Moretti, 2002) and persistent anti-social behaviour (Moffit, 1993).

While there is some research and theory informing the study of female delinquency, less attention has been given to understanding gender-specific mental health needs and risk factors related to recidivism. The current study investigates the mental health needs and predictors of recidivism in a community sample of adolescent offenders with a particular emphasis placed on gender-specific differences.

Female Delinquency

While adolescent males are responsible for more frequent and serious criminal offenses (i.e., murder, assault) than females (Messerschmidt, 1993; Chandy, Blum & Resnick, 1996; McCabe, Lansing, Garland & Hough, 2002; Rhodes & Fischer, 1993), some argue that this gender difference is one of "degree rather than kind" (Kempf-Leonard & Tracy, 2000).

However, this explanation becomes more tenuous as the "degree" of difference between male and female delinquency quickly begins to diminish over time. Female criminal behaviour has begun to resemble the more frequent and serious criminal activity that is typical of male delinquents (Calhoun, Jurgens & Chen, 1993). The gap between the genders begins to decrease as rate of female adolescent crime increases, while male delinquency trends remain static (Calhoun, Jurgens & Chen, 1993; Steffensmeier & Allen, 1998; Stevenson et. al., 1998). In fact, the proportion of girls charged with violent crimes increased twice as fast as that of boys over the last four years (Quinsey, Skilling, Lalumiere & Craig, 2004). Furthermore, females are considered to be the fastest growing portion of the correctional population (Hubbard & Pratt, 2002).

Despite the gender differences in criminal trends, much of the delinquency literature ignores female offending and focuses primarily on adolescent male populations, including the majority of studies examining adolescent recidivism. Many times when females are included in study samples, they are overshadowed in representation by the much larger proportion of male participants. This prevents a sound gender comparison across variables relating to delinquency or mental health needs. Oftentimes, the gender samples are combined and analyzed as a whole, thus, "washing out" any potentially significant or different contributions made by females (e.g., Pliszka, Sherman, Barrow & Irick, 2000). While it is accepted that it is more difficult to obtain female youths committing crimes than male youths, some studies, while having a greater proportion of male participants, have obtained a sufficient number of females in their sample to facilitate appropriate gender comparisons (e.g., Teplin, Abram, McClelland, Dulcan & Mericle, 2002).

The failure to examine possible gender differences in delinquency could lead to the assumption that there are no significant gender differences in adolescent offending or that female delinquency is unimportant (Funk, 1999). Contributing to the importance of studying gender differences is the finding of differential treatment of females within the justice system. Some have found that the juvenile courts treat females more leniently than the males (Hoge, Andrews & Leschied, 1994), while others believe the courts tend to be stricter with females (Reitsma-Street, 1991). In their study of inner-city adolescents, Rhodes and Fischer (1993) discovered that although males and females did not differ in the prevalence of status offenses committed, females were more likely to be brought to the court for such violations. There appears to be no empirical justification for these actions.

In present years, research on delinquency has become more ambitious and has extended beyond criminal offending patterns to seeking out the roots and correlates of criminal behaviour. There is some empirical evidence which suggests that offending risk factors (e.g. Chesney-Lind, 1997; Mazerole, 1998) as well as mental health needs (e.g., Timmons-Mitchell, Brown, Schulz, Webster, Underwood & Semple, 1997) differ between male and female adolescent offenders. However, there are also studies which contest that gender differences exist in adolescent crime (e.g. Rantakallio, Mhyrman & Koiranen, 1995; Kempf-Leonard & Tracy, 2000). The current increases in frequency and severity of female crime as well as the possible gender differences in offender profiles suggest that female delinquency may be progressing on a different trajectory. Thus, if gender specific factors and mental health needs were identified in the scientific literature, more effective assessment and intervention strategies, that consider the differences between the two offender populations, could be developed.

Gender-Specific Risk Factors and Mental Health Needs

Individual

Trauma/Violence. While traumatic events are experienced by both male and female delinquents, it is believed that the males are more often witnesses of violence while females are more often the victims of it (Cauffman, Feldman, Waterman & Steiner, 1998). Adolescent females who commit crimes have been found to experience a greater amount of physical, sexual and emotional abuse than their male counterparts (McCabe et. al., 2002; Aalsma & Lapley, 2001). In a study of incarcerated youth by Day (1998), it was found that females with greater sexual or physical abuse had a greater likelihood of earlier court contact. In this same study, abuse was not a significant predictor for court contact in males. Chesney-Lind (1989, 1997) argues that child abuse and/or neglect poses specific risks to females.

The type of abuse experienced may also have a specific influence on the pattern of criminal behaviour in females. In a study by Rhodes and Fisher (1993), sexually abused girls were responsible for more property offences and drug sales, while physically abused females engaged in more status offences and misbehaviour. Another study found that girls that had been physically abused were seven times more likely to commit a violent offence compared to females that had not been physically abused (Herrera & McCloskey, 2001). This finding lends support to the experience of family violence by females in later sections and suggests that different types of abuse may have differential consequences on development.

Mental Health. Gender differences in internalizing and externalizing behaviours and psychopathology is well substantiated in the general literature (e.g., Casper, Belanoff & Offer, 1996), with males exhibiting more externalizing behaviours and females more internalizing. In studies of youthful offenders, the evidence seems to confirm this trend. Katoaoka, Zima, Dupre, Moreno, Yang and McCracken (2001) found that 80% of the incarcerated adolescent females

they studied exhibited symptoms of an "emotional disorder" or substance use problem. The measures used to study the symptoms predominantly examined depression and anxiety symptoms and, thus, represented symptoms of an internalizing nature.

Research that has made direct male and female comparisons also demonstrates a clear gender distinction in the internalizing domain, but to a lesser degree in the externalizing domain. In their study of youths entering a custody facility, Aalsma and Lapsley (2001) found that females belonged to a group representing internalizing psychopathology, while the males were characterized by externalizing behaviours and a higher degree of substance use. Cauffman, Piquero, Broidy, Espelage and Mazerole (2004) examined degree of restraint (similar to externalizing behaviour) and distress (similar to internalizing behaviour) in delinquent youths. They found that while males and females had similar levels of restraint, the females experienced significantly more distress than the males.

In another study of detained adolescents, Teplin and colleagues (2002) found that although both genders were found to have a greater prevalence of psychiatric diagnoses than the general population, females were found to have higher rates of many disorders than the males. Specifically, the females had significantly higher odds of having an affective (ie. major depressive or anxiety) disorder when compared to males. Thus, there was a gender difference with internalizing disorders, but no overall gender difference in externalizing behaviour disorders. The study by Teplin and colleagues (2002) is merited by having a large (1172 males and 657 females) and ethnically-representative (African-American, Hispanic, white) sample, but is limited by its cross-sectional nature.

However, one study looking at youths in secure custody by Day (2002) also found that females exhibited a greater severity of emotional disturbance than males, which included

externalizing problems. More of the females scored within the clinical ranges of several domains, including conduct problems, other externalizing behaviours, and suicidal ideation/attempts. The results of this study, however, should be interpreted with caution due to its relatively small sample size and use of youths in custody.

Internalizing and externalizing problems can also be found to be associated with other conditions in youthful offenders. Goldstein, Arnold, Weil, Mesiarik, Peuschold, Grisso and Osman (2003) have found both internalizing and externalizing symptoms to be correlated with specific problems in a sample of 232 females in a juvenile justice facility. Goldstein and his colleagues (2003) found that the combination of depression and externalizing symptoms were correlated with substance abuse problems, depression symptoms alone correlated with suicidal ideation and externalizing symptoms alone correlated with familial discord.

The gender-comparison studies reviewed suggest that female adolescents in the justice system are significantly more disturbed than the males as they experience high levels of both internalizing and externalizing problems. Consistent with the finding that females present with more emotional disturbances, Timmons-Mitchell and researchers (1997) found that incarcerated adolescent females had a greater prevalence of mental health need than incarcerated males (84% compared 27%, respectively). Females scored significantly higher on the Symptom Checklist-90-R than males on symptoms of anxiety, depression, hostility, interpersonal insensitivity, obsessive-compulsive, paranoid, psychoticism and somatization.

While mental health seems to be an important domain in the profile of the female delinquent, there is evidence that it may also serve as a predisposition to delinquency (Obeidallah & Earls, 1999). Using a longitudinal design, Wiesner (2003) studied depressive symptoms and delinquency in high school students over four six-month intervals. While higher

levels of delinquency resulted in depression in both males and females, depression in females was also found to be correlated with later delinquent behaviour and prolonged depression with a de-escalation of delinquent activity, thus demonstrating a reciprocal relationship between depression and delinquency for females. These findings indicate that delinquency may predispose both genders to depression, but depression also predisposes females to initial but not prolonged criminal activity. Thus, female adolescents who experience depression are likely to participate in some criminal activity, but may be less likely to recidivate. However, since this study has a unique methodological design, further replications of this finding would be needed to lend greater support to it.

Substance use/abuse A study by Kim and Fendrich (2002) found that adolescent male offenders engaged in more substance use than females, though females reported a significantly higher dependence. It was also found that females were more likely to admit to substance abuse problems and thus, the rate of dependence reported by the males may have been understated. The incidence of substance abuse disorder was similar between genders in a study of adjudicated youths by McCabe and colleagues (2002). However, as Kim and Fendrich (2002) suggest, the reporting of substance abuse by males may also have been underreported due to their reluctance to admit dependence. The inconsistent findings may also be a result of the type of youths recruited for the studies. For example, Kim and Fendrich (2002) sampled detained adolescents, whereas McCabe and researchers (2002) studied adjudicated youths. Yet, of the eight mental disorder diagnoses examined in the study by Timmons-Mitchell and colleagues (1997), the males received a diagnosis of substance abuse disorder significantly more than the females. This finding appeared even though females demonstrated a significantly higher number of psychological symptoms than the males.

Suicidal Ideation/Attempts. Considering the prevalence and type of mental health issues experienced by adolescent female offenders, it is not surprising that suicide is also a significant issue in this population. Goldstein and researchers (2003) found that female juvenile delinquents who experienced high levels of depressed symptoms had a significantly higher number of suicide attempts. The sample Goldstein and his colleagues used, however, did not include males. Among the higher number of psychological problems reported by females, Timmons-Mitchell and colleagues (1997) found females to exhibit more suicidal tendencies than males. In the Aalsma and Lapley (2001) study, the number of suicidal attempts was also higher in the female delinquents than the males. However, this gender difference does not go uncontested. Walrath, Ybarra, Holden, Manteuffel, Santiago and Leaf (2003) investigated suicidal attempts in a mental health service-referred adolescent sample, which included both genders as well as both delinquent and non-delinquent youths. With respect to suicidal attempts, they found no difference between the genders, or between those with convictions and those without. This indicates that suicidal attempts are consistently experienced among mental health referred adolescents, regardless of gender or criminal history.

Family

Parenting Problems and Family Variables. Hoge, Andrews and Leschied (1994) found that female delinquents experienced significantly more family problems than males. The researchers concluded that the "home environments of female offenders are generally more dysfunctional than those of the males". Although this finding directly contradicts Walrath et. al. (2003) who found no significant differences in family variables, it is consistent with others who posit that females experience more conflict in their home environment (Chesney-Lind, 1989, 1997, Aalsma & Lapley, 2001). While on the surface it may appear that the previously

mentioned studies examined similar family variables, further detailed examination reveals a difference in conceptualization of familial influences. Walrath and colleagues (2003) examined the criminal and psychological history of parents/caregivers in addition to living instability (which is closer to Saner and Elickson (1996) and Mazerole's (1998) research), while Hoge, Andrews and Leschied (1994) examined more specific relational and parenting role variables, such as the quality of relationship between parent-child and quality of supervision and discipline. This suggests that while both troubled adolescent males and females tend to have parents/caregivers with a comparable degree of problems, the familial relationships female delinquents have are more strained and report a greater lack of structure in their family environments than the males. It may be that perhaps, as in the case of substance abuse problems (Kim & Fendrich, 2002), females are more likely to disclose problems within the home.

Familial Violence - Victims and Perpetrators. The experience of family violence by both males and females was investigated by Walrath and colleagues (2003), but gender differences were not found. However, when Herrera and McCloskey (2001) focused specifically on the initiation of family/domestic violence, they found that it was committed more by females than males. Herrera and McCloskey (2001) suggest that perhaps the "context for (committing) violence" differs across genders, with males having a tendency to initiate violence outside the home, while females initiate violence within the home.

In a study by Saner and Ellickson (1996), it was found that low parental support as well as negative life events (as defined by parental separation and divorce, death in the family) seemed to influence female adolescent violence to a greater degree than it did males. However, Mazerole (1998) found negative life events to significantly predict delinquency in males but not females. This finding was also specific to violent offenses. Both studies used large samples and

the same operational definition of negative life events, thus it is unclear why opposite findings occurred. Perhaps, the inconsistency might have been cleared up by considering the context of the violent offence as suggested by Herrera and McCloskey (2001).

Peers

The influence of peers on adolescent offending has been well researched and documented. It is clear that both female and male adolescent offenders tend to be associated with negative peers (Carr & Vandiver, 2001; Hoge, Leschied & Andrews, 1994). Affiliation with deviant peer groups has also been found to promote adolescent violence (Saner & Ellickson, 1996). In addition, many of these youths are also found to be involved in gangs (Rhodes & Fischer, 1993; Tollett & Benda, 1999).

While the presence of negative peers appears to influence both genders, there may be significant underlying gender differences in how offenders conceptualize their peer associations. There is some empirical evidence that suggests social bonds may be of greater importance to females (Ahnlund & Frodi, 1996; DeFronzo & Pawlak, 1993; Barbour, 1996). Also, in a study by Saner and Ellickson (1996), it was found that relational problems experienced by adolescents had more of an impact on initiation of violence for females. Females also seek intimacy in their relationships to a greater degree than males (Buhrmester & Furman, 1987). Although gang membership is found to be a significant correlate to both male and female delinquency, roles that individuals are given within the gang can differ by gender (Campbell, 1987).

Adolescent Recidivism

A recent meta-analysis conducted by Cottle, Lee and Heilbrun (2001) examined a wide range of risk factors in order to identify which ones best predict adolescent recidivism. The researchers examined 23 studies published between 1983 to 2000 and represented a total of 15,265 youths.

The 30 risk factors arising from all the studies were split into eight groups: 1) demographic information (gender, age, socioeconomic status), 2) offense history (age at first court contact, age at first commitment, number of prior arrests, number of prior commitments, type of crimes committed, length of first incarceration), 3) family and social factors (physical/sexual abuse, single parent, parent pathology, number of out of home placements, family problems, effective use of leisure time, delinquent peers), 4) educational factors (special education history, attendance, achievement), 5) intellectual and achievement scores (achievement scores, verbal IQ, performance IQ, full scale IQ), 6) substance use history (substance use, substance abuse), 7) clinical factors (severe pathology, non-severe pathology, conduct problems and history of treatment) and 8) formal risk assessment. Raw statistics from the studies were converted into correlation coefficients and effect sizes were calculated.

Every one of the demographic, offence history and risk assessment variables examined were found to significantly predict recidivism in youths. Of the family and social variables only parent pathology was not significantly related to recidivism. Special education history, achievement score, full scale intelligence quotient and verbal intelligence quotient of the intellectual, achievement and school domains were also significantly associated with recidivism. Finally, experiencing specific problem such as substance abuse (but not substance use), history of conduct problems and non-severe pathology were predictive of recidivism. The significance of the variables was assessed at this level, primarily, by p values.

All the significant variables were then rank-ordered according to their weighted mean effect size, which considered the variance in sample size across studies and provided a standardized means of comparison. In addition to sample size, the weighted effect sizes considered the number of participants with "null results" (or lack of significant findings) needed to conclude

that a finding is nonsignificant. Of all the significant predictors age at first commitment, age at first contact and history of non-severe pathology were found to have the strongest effect size values. The results suggest that static and dynamic factors are both important to examine and also that these factors may have a cumulative effect on prediction. Risk assessments, which were found to be significantly predictive in the meta-analysis, look at a large number and varied combination of dynamic and static factors.

Many of the variables contained in this meta-analysis (e.g. abuse, mental health problems) have been implicated by the literature as being important in the study of female delinquency. While male gender was found to be a significant predictor of adolescent recidivism, gender-comparisons across the risk factors were not made, nor was gender one of the strongest risk factors (according to the weighted effect size value). This may have been due to the majority of collective participants being male. Nevertheless, this recent meta-analysis made an important contribution by facilitating an empirically valid comparison of the assorted research efforts on adolescent recidivism. As a result, the findings of the meta-analysis provide a valuable framework for the study of gender-specific factors of recidivism.

Gender Differences in Recidivism

Of the studies conducted on juvenile recidivism, few have attempted to look at gender differences. Some researchers have found gender itself to be a correlate of recidivism (Quist & Matshazi, 2000; Tollett & Benda, 1999), but they have not been able to isolate gender-specific associations with recidivism.

One may argue that these studies have methodological designs, which may cause gender differences in recidivism to go undetected. Such designs may not include important variables significant for female youths in the justice system or they may contain a small number of

females. However, there has been some research efforts that do not suffer from some of these limitations and make appropriate gender comparisons for adolescent recidivism (Fergusson & Horwood, 2002; Kataoka et. al., 2001; Kempf-Leonard & Tracy, 2000; Archwamety & Katsiyannis, 1998; Funk, 1999; Carr & Vandiver, 2002), but this research is not extensive. The few studies that have attempted to tackle this issue differ to varying degrees in their methodology, research scope and samples.

A longitudinal study conducted by Fergusson and Horwood (2002) examined differences in recidivism between genders. A New Zealand birth cohort of 1,265 infants was followed from birth for 21 years. However, there was complete data regarding conduct problems on only 896 of these participants. This subset of participants were separated into five subgroups based on criminal activity: 1) low risk, 2) adolescent-limited crime - early onset, 3) adolescent-limited crime- intermediate onset, 4) adolescent-limited crime - late onset and 5) chronic offending. The researchers collected information regarding sociodemographic background (maternal education, family socioeconomic status, family living standards), family functioning and parental adjustment (parental conflict, history of alcoholism, parental illicit drug use) and other variables (self-esteem, novelty-seeking behaviour). This data was collected through individual and parent self-report. Gender was a significant contributor to group membership, yet none of the individual variables used in this study were significantly different between males and females. Females were more likely to belong to the low risk and early onset adolescent limited group, while males were more likely than females to belong to the late onset adolescent limited or chronic offending group. This finding suggests that females are more likely to engage in criminal activity earlier in their adolescence, while males tend to commit crime later in their adolescence. Also, females in this sample were less likely to recidivate than males. Major

limitations of this study were the lack of statistical power generated by having proportionately fewer females in the sample as well as the potentially biased information obtained by self-reports. This study's longitudinal structure was a definite merit. The research could have benefited by including variables that are traditionally linked to recidivism and gender differences in delinquency such as abuse history, criminal offending information and personality variables.

Kempf-Leonard and Tracy's (2000) study examined 14,000 female and 13,160 male delinquent and non-delinquent participants, from the ages of 10 to 17, in a Philadelphia birth cohort study. Information regarding the participants' criminal history was obtained from courts and police departments and collected up to age 26. As found in other studies (Archwamety & Katsiyannis, 1998; Wierson & Forehand, 1995), adolescent recidivism increased as a function of crime severity. Males were three times more likely to be chronic offenders than females. While males and females differed on the incidence of crime and type of crime committed, Kempf-Leonard and Tracy (2000) concluded that this difference was one of "degree, not kind". In other words, while male and female delinquents did not differ in their pattern of criminal activity, but instead differed in the intensity of that pattern. In this study, no personality, environmental or psychological variables were studied. The study specifically investigated patterns of offending between sexes, which does not give much insight in how chronic offending should be prevented, how high risk offenders can be targeted for intervention or whether adolescent males and females differ in the path that leads them to committing crime.

Kataoka and colleagues (2001) chose to examine mental health problems and mental health service use and its association to criminal history. Information was obtained for 54 incarcerated females during the period of 1997 to 1998. Participants were to complete self-report instruments that examined psychopathology. Sociodemographic information was also

obtained along with crime information. Though information about prior incarcerations of the participants was collected, recidivism was not a major focus of the study. One notable finding, however, was that recidivist females were more likely to have a substance abuse problem, especially in relation to alcohol. This link between substance abuse and recidivism is consistent with some of the research in male samples (Duncan, Kennedy & Patrick, 1995; Niarhos & Routh, 1992). This finding regarding substance abuse problems in female recidivists should be interpreted cautiously as the measure used evaluated lifetime substance use. This study is similar to the one conducted by Kempf-Leonard and Tracy (2000) in that it failed to include certain individual and family variables such as family relationships and abuse history that are deemed important by previous research on juvenile delinquency and recidivism.

There have, however, been studies with female delinquents that have included psychological and environmental variables along with criminal history. Archwamety and Katsiyannis (1998) studied 238 females, 96 of whom were recidivists. Information about crimes committed, intellectual capacity, psychological problems and environment was obtained in the 1988 to 1994 period. Using logistic regression, several variables differed significantly between recidivists and non-recidivists. These variables were length of stay in corrections, number of prior placements, age at first offence, arithmetic score, risk assessment score, gang membership, abuse, location of prior residence (urban vs. rural), race and crime type. Of these variables, the ones that have not been implicated as discriminators between male recidivists and non-recidivists are abuse, location of prior residence and race. The strongest correlates, however, were age at first offence and location of prior residence. A limitation of the study is that male delinquents were not included in the sample. Male recidivists would have been an ideal basis of comparison

against the female recidivists, to make more sound conclusions about gender differences in recidivism.

Funk's (1999) study included both male and female delinquents and set out to examine whether separate risk assessments for delinquent classification for males and females is necessary. Data on the participants was obtained from 1993 to 1996 for 388 males and 112 females. Information was collected on a wide range of variables including social history, demographics, and crime history. This information was extracted from probation reports that had included information obtained at interviews with the youth, their guardians, and other relevant sources such as school personnel. The experience of child abuse and running away significantly increased the likelihood of reoffending in females, while poor school behaviour and financial hardship increased the reoffending risk in males. This finding is consistent with other available literature suggesting that the family environment has a greater impact on female delinquents (Hubbard & Pratt, 2002), but inconsistent with others (Walrath et. al., 2003). Funk (1999) concluded that separate risk assessments would be needed to assess reoffending risk of females and males. This study has many merits including its relatively large sample size and inclusion of independent variables related to the youth's social history. It should be noted, however, that the sample of youths were placed on probation or were referred to the department of juvenile justice (youths who are not on formal probation but have entered the juvenile justice system) and thus, may represent a subset of more serious juvenile offenders. In addition, the males and females differed in several aspects including types of offending, but no attempts were made to control for these differences.

Hoge, Andrews and Leschied (1996) sampled 270 males and 68 female youths for examination of the association between family, peer and attitudinal variables and the outcomes

of committing serious crimes and reoffending. Although females were found to have significantly more problems in family relationships and family structure, a gender difference was not found in the association of these variables to committing serious crimes and reoffending. While this study examined variables hypothesized as significant in female delinquency, they also should have included variables such as abuse history and/or running away behaviours which are found by previous research as being significant influences on female adolescents. An earlier study by Hoge, Andrews and Leschied (1994) examined the association of antisocial attitudes with criminal behaviour. Antisocial attitudes were measured in the youth by examining the 6 items of the attitudes/orientation scale on the YLS/CMI and the researchers included both genders in the sample. Although they found that antisocial attitudes were significantly associated with serious criminal offending and incidence of new crimes, no gender differences were found.

While the majority of research in this area has focused on risk factors, Carr and Vandiver (2001) took a unique approach by choosing to examine protective factors alongside risk factors in adolescent recidivism. Archival records, which included information on crime, school performance, family and personal characteristics were obtained on 76 juvenile probationers (43 males and 33 females). No significant gender differences were found between recidivists and non-recidivists. There were, however, several significant differences in protective factors in recidivism. Non-repeat offenders had better positive attitudes with respect to school, rules, themselves and the police. They sought out help with their schoolwork more often and performed better in school than repeat offenders. They also had a greater degree of structure and rules within their household, more family support, fewer siblings and more friends than recidivists. In terms of risk factors, only total scores on personal and family risk factors

differentiated recidivists from non-recidivists. This study indicates that protective factors are very important to investigate in these adolescents. Nevertheless, a major limitation of this study is its small sample size. In a larger sample, the finding would, perhaps, be different.

Due to the variability in research methodology and sample content, it is difficult to compare studies on gender differences in recidivism. While there has been some progress in the methodology of the studies on gender differences in recidivism, it is apparent that the area is limited by sample size and composition as well as lacking a comprehensive investigation of the adolescents' history. Some of the studies mentioned would benefit by including both male and female delinquents as well as recidivists so that a thorough investigation, which includes direct gender comparisons and follow-up data can occur. Also, by obtaining information regarding the youth's developmental and mental health information, personality, family history, peers and criminal history, the investigation gains both scope and depth. When any of these domains are left out or are incomplete, potentially significant variables may be overlooked and an accurate depiction of adolescent recidivism is compromised. Therefore, it is apparent that there is a need for research which examines recidivism in samples that include both sexes and that includes a comprehensive collection of independent variables that cover individual, relational as well as crime variables.

The Present Study

The current study will 1) examine gender-specific mental health needs of youths in a forensic population, 2) investigate a comprehensive set of risk factors/predictors of recidivism in the youths and 3) determine if gender-specific risk factors for recidivism are present. The design of the present study has overcome some of the problems indicated in previous research, such as a narrow range of risk factors and failure to include both males and females. Variables of interest,

with respect to gender differences, are individual variables (i.e. substance abuse, mental health needs), relational variables (i.e. parent-child relationships, family violence, peer associations) and criminal history. In addition, a more precise analysis of recidivism was conducted by examining the survival time in months. It is expected that females will demonstrate a pattern of mental health needs that are distinct from the males and that criminal patterns and survival distributions will be influenced by a combination of risk factors that are specific to gender.

Method

Participants

The participants for this study consisted of 133 court-referred adolescent offenders (range = 12.0 to 18.5 years of age at the time of the assessment) in Thunder Bay, Ontario, Canada. The sample comprised of 83 males (62.4%) and 50 (37.6%) females. The mean age at the time of the assessment for males was 14.88 years and 15.03 years for the females. The average overall follow up period for the whole sample was 35.1 months, whereas for the males the average follow-up was 36.92 months and for the females was 32.06 months. These youths were evaluated by a specialized multidisciplinary mental health assessment team between March 1996, and October 2000 to assist the court in disposition.

Measures

Child Behavior Checklist. The Child Behavior Checklist (CBCL) (Achenbach, 1991a) and Youth Self-Report (YSR) (Achenbach, 1991b), completed by the parent and youth, respectively. These widely used checklists consist of 112 items, each rated on a 0- to 2-point scale. Problem scales consist of 8 narrowband subscales (withdrawal symptoms, somatic complaints, anxiety/depression symptoms, social problems, thought problems, attention problems, delinquent behaviour and aggressive behaviour) and 3 broadband factors (externalizing problems, internalizing problems and total problems). Both are well-established measures with considerable psychometric support (Achenbach, 1999). The parent form, for example, has demonstrated 1 week test-retest reliabilities of .93 for total problem and externalizing scales (Achenbach, 1991a).

Recidivism Data. The Royal Canadian Military Police (RCMP) national police registry has been accessed to obtain each youth's complete criminal records. Recidivism for each youth

has been measured through two outcome variables: a) Any Reoffending (AR) and b) Violent Reoffending (VR). The classification of a violent offense was based on Catchpole and Gretton's (2003) definition which included assault, aggravated assault, assault causing bodily harm, robbery, intimidation, unlawful confinement/forceable seizure, harassment, stalking and use or possession of a weapon. Recidivism data was only available for 130 of the youths and survival time was measured according to when the youth was convicted, and not the actual date of the offence. Sixty-one of the 130 youths committed another offence following the initial assessment. About half of the males ($n = 42$, 51.2%) and about two-fifths of the females re-offended ($n = 19$, 39.6%), but this difference was not statistically significant, X^2 (1, $N = 130$) = 1.65, $p = .20$.

Youth Level of Service/Case Management Inventory (YLS/CMI). The YLS/CMI (Hoge & Andrews, 2002), is a 42-item checklist divided into eight subscales: offense history, family circumstances/parenting, education, peer relations, substance abuse, leisure/recreation, personality/behaviour, and attitude/orientation. It was completed by a mental health professional or probation officer based on interviews with the youth, review of clinical records, and information gathered from various collateral sources. Each item on the YLS/CMI is coded as either present or absent, with present items summed to give a total score ranging from 0 to 42. Examples of several YLS/CMI items include such risk factors as "disruptive classroom behaviour" and "substance use interferes with life". Based on the total score, youth are categorized into four risk levels (i.e., low, moderated, high and very high) for continued criminal activity. This measure provides a broad and detailed survey of risk, need, protective and responsivity factors relevant to delinquent youth (Hoge & Andrews, 2002) and was obtained from probation services in Thunder Bay.

Demographic Face Sheet. This form (Appendix A) was put together by the multi-disciplinary assessment team as a means of tracking information about each youth's family, living standards, offense information, mental health involvement and history of personal abuse. Some items included on the form, such as ratings of severity of different forms of abuse, were made by the clinician(s) who completed the court ordered assessment on each youth. Thus, some of the ratings are based on clinical judgment. Although the ratings were not complex, consisting of at most, three response choices (ie. none, moderate or severe), the subjective nature of the ratings is a noted limitation.

Personal Experiences Screening Questionnaire (PESQ). The PESQ is a brief self-report substance abuse screening questionnaire designed for youth between 12 and 18 years of age. The questionnaire consists of 40 items that are separated into 3 subscales: problem severity, psychosocial items and drug use history. The instrument possesses strong internal consistency, but does not report test-retest reliability in the manual. It has also demonstrated sound content and predictive validity (Winters, 1991).

Structured Assessment of Violence Risk in Youth (SAVRY). The SAVRY (Bartel, Borum & Forth, 2000) is an instrument designed to help predict an adolescent's risk of violence. It can be a useful guide for intervention planning. It is composed of 24 risk items and six protective factors. There is an emphasis on dynamic risk/needs factors in the SAVRY. The items of the SAVRY examine four different areas: Historical, Social/Contextual, Individual and Protective. The SAVRY is considered to have a relatively high predictive validity (Borum, Bartel & Forth, 2002). The SAVRY was coded in the current study by file review conducted by two trained raters. The files consisted of psychological and psychiatric assessments and may have also included additional collateral reports, such as speech language assessments. The two raters have

been compared for inter-rater reliability on their coding of 20% of the participants. The interclass correlation computed for the SAVRY total scores between the two raters indicated a high level of inter-rater reliability ($r = .96$).

Procedure

Data were collected for each adolescent offender as part of a standardized assessment procedure conducted by a specialized multidisciplinary mental health team to assist the court in disposition. The adolescents who were referred for these types of assessments tend to be youths who presented with more serious mental health concerns and a higher risk for antisocial behaviour than the general population of adolescent offenders (Jack & Ogloff, 1997). Psychometric data, demographic information, social and family history were collected for each individual as part of the protocol required for preparation of the court disposition and clinical services.

The YLS/CMI, recidivism, CBCL and PESQ data was collected as a part of an extensive psychological team assessment required for judicial dispositions. The SAVRY was also coded, more recently, to assess each of the participants on violence risk, respectively.

Data Analysis

Some of the demographic/historical variables (ie. physical abuse or substance abuse difficulties) required ratings to be made. These demographic/historical variables were examined separately for the males and the females by percentages and proportions. Chi-square tests were used to test for gender differences among these sample characteristics.

The degree of emotional and behavioural problems experienced by the participants was examined by computing mean and variability scores on each of the CBCL and YSR scales by gender. Subsequent factorial multivariate analysis of variance (MANOVA) were conducted to

test if significant linear combinations of emotional and behavioural symptoms existed across gender. Two MANOVAs were conducted to compare gender differences, one for the CBCL and the other for the YSR. Significant MANOVAs were followed up with univariate ANOVAs. Gender means were examined for significant ANOVAs to interpret the direction of significance.

A Kaplan-Meier analysis was conducted to yield an overall comparison of the survival distributions (rates of recidivism) by gender. More technical analyses that considered the influence of risk factors on recidivism were also performed. Prior to the analyses of risk factors, correlations between each of the correlates were tested to remove undue effect of multicollinearity. As well, variables that were similar in content were tested for internal consistency (e.g. Funk, 1999). Those meeting a specific cut-off coefficient value were combined into a composite variable.

Single cox regressions were run for each separate correlate resulting in over 20 univariate cox regressions for each gender. Evaluations of odds ratios, measures of effect size (G2), 95% confidence intervals and p-values were made to determine the significance of the correlates. Measures of significance other than p values were considered in evaluating the strength of associations as current guidelines assert that reporting effect sizes is "essential to good research" (Wilkinson & APA Task Force on Statistical Inference, 1999). This perspective is supported by several key sources in prior literature (e.g. Cohen, 1977; Rosenthal, 1980). After significance was evaluated, the significant correlates were entered into a forward stepwise multivariate cox regression to test the significance of the risk factors against each other to create a parsimonious model. A direct gender comparison of the influence of correlates on recidivism was not undertaken, as the resulting small sample sizes in a forward stepwise cox regression would be objectionable. Missing data estimation was considered for the data; however, it was not used

because there is a lack of articulated guidelines in the literature regarding optimal sample sizes and optimal time intervals. In addition, there is a lack of protocol for dealing with missing data for a special population of adolescent offenders referred for mental health assessment.

Results

Gender Differences in Mental Health Needs

Historical and demographic characteristics in the sample are detailed in Tables 1 and 2. The characteristics detailed in Table 1 were obtained from the demographic face sheet, while the characteristics in Table 2 were obtained from psychological measures used for the study.

Of the several characteristics examined, gender differences were found only on a relatively small proportion. In particular, many of the maltreatment variables significantly differed by gender, including physical abuse, X^2 (2, N = 114) = 8.99, p = .011, η^2 = .202, sexual abuse, X^2 (1, N = 110) = 4.07, p = .044, η^2 = .192, emotional abuse, X^2 (2, N = 110) = 7.48, p = .024, η^2 = .206, but not neglect, X^2 (1, N = 113) = .48, p = .49, η^2 = .065. It should be noted that while physical, sexual and emotional abuse data was obtained directly from data obtained directly from the court-ordered assessment, the neglect data was obtained from one of the items on the SAVRY. Significant gender differences were also found with substance abuse difficulties, X^2 (2, N = 129) = 8.03, p = .018, η^2 = .246, poor father-child relationship, X^2 (1, N = 114) = 4.54, p = .033, η^2 = .200 and committing a sexual offense, X^2 (1, N = 125) = 15.33, p < .001, η^2 = .350. A maltreatment variable was also calculated by summing the three abuse variables and the victim of neglect variable (SAVRY). Any score greater than one was counted so that the influence of any maltreatment in the youths' backgrounds could be examined (see Table 1). This variable was significantly different across gender, X^2 (6, N = 90) = 17.07, p = .009, η^2 = .435.

Gender Differences in Emotional and Behavioural Problems

Descriptive analyses were conducted on the *t*-score means of the summary and syndrome scale scores of the parent report CBCL (see Table 3). The group mean scores on the syndrome scales indicated that the males scored, on average, in the borderline-clinical range for aggressive ($M = 69.62$, $SD = 14.1$) and delinquent behaviour ($M = 70.97$, $SD = 11.6$). The mean scores for females were also elevated for aggressive ($M = 72.52$, $SD = 10.3$) and delinquent behaviour (M = 77.73, $SD = 9.92$) with the severity of these behaviours surpassing that of males and falling within the clinical range.

Multivariate analyses of variance (MANOVAs) were conducted on the eleven CBCL scales to explore potential mean differences between males and females. An alpha level of .05 was used to assess significance, but measures of effect size (η^2) and observed power (obs β) were also considered. Significant MANOVAs were followed up with univariate ANOVAs with Bonferroni corrections to adjust for the resulting multiple comparisons. The MANOVA was significant, $F(11,79) = 2.04$, $p = .035$, and the analyses demonstrated that the overall strength of association between the CBCL scales and gender was moderate, partial $\eta^2 = .221$, obs $\beta = .876$. In the resulting ANOVAs, group means were examined at points of significance to determine the direction of the effect.

The only significant gender difference was in the delinquent behaviour mean score, $F(1,89) = 8.38$, $p = .005$, partial $\eta^2 = .086$, obs $\beta = .817$. As seen in Table 3, females exhibited a higher mean score on delinquent behaviour than males. The results of the ANOVA of the CBCL scores are given in Table 4.

The summary and syndrome mean scores of the youth self-report (YSR) were also examined by gender (see Table 5). The mean scores for the YSR were lower than the parent

report means across all the scales. Furthermore, on average, females scored themselves higher on all the summary and syndrome scales than the males. In fact, all of the scores on the YSR completed by males were within the normal range, albeit on the upper end. The majority of the mean syndrome scores were also within the normal range for the females, however, they reached a clinical level for delinquent behaviour ($M = 72.55$, $SD = 10.2$).

The MANOVA conducted on the YSR scales by gender was also significant, $F(11,99) = 3.10$, $p = .001$. Like the MANOVA for the CBCL scales, an alpha level of .05 was used to assess significance along with effect size and power. As well, a Bonferroni correction was used to adjust for the number of comparisons used. The overall association between the combined YSR scales and gender was moderate, partial $\eta^2 = .232$, obs $\beta = .966$. From the resulting ANOVAs, it was found that the male and female youths differed significantly on all three summary domains, externalizing: $F(1,109) = 19.48$, $p < .001$, partial $\eta^2 = .152$, obs $\beta = .992$, internalizing: $F(1,109) = 8.70$, $p = .004$, partial $\eta^2 = .074$, obs $\beta = .832$, total problems: $F(1,109) = 11.06$, $p = .001$, partial $\eta^2 = .092$, obs $\beta = .909$, as well as the anxious/depressed, $F(1,109) = 7.97$, $p = .006$, partial $\eta^2 = .068$, obs $\beta = .799$, aggressive, $F(1,109) = 11.89$, $p = .001$, partial $\eta^2 = .098$, obs $\beta = .928$, and delinquent behaviour scales, $F(1,109) = 15.48$, $p < .01$, partial $\eta^2 = .124$, obs $\beta = .974$. Examination of the gender means on each of the scales in Table 5 demonstrated that females were significantly higher than the males on the summary domains, as well as self-reporting more anxious/depressed symptoms and aggressive and delinquent behaviour. Results of the ANOVA of the YSR scales are displayed in Table 6.

Gender Differences in Recidivism

The mean number of re-offences committed by males was 2.07 ($SD = 3.19$) and 1.29 ($SD = 2.06$) for females. This difference, however, did not prove to be significant, $t(128) = 1.70$, $p =$

.093 (equal variances not assumed). See Table 7 for offending data regarding type of re-offences and frequency of offences. Even though males were responsible for more re-offences, the proportion or degree of re-offending seems similar to the females. After examining the re-offence history of both genders by comparing group means, it was found that males committed significantly more violent re-offences than females, although the genders did not differ significantly in overall recidivism, overall recidivism: X^2 (1, N = 128) = 1.65, p = .199, η^2 = .113; violent: X^2 (1, N =128) = 4.07, p = .044, η^2 = .177.

In Figure 1, the survival rates of both genders are illustrated. The survival rates were measured by the number of months after release from custody without the youth committing a re-offence. The rates of males and females appear similar up to 10 months after release to the community, but the curves diverge after this point. Generally, males seem to exhibit a lower rate of survival than females. A Kaplan-Meier analysis was conducted to test the equality of survival distributions by gender. Although the survival curves demonstrated a divergence in recidivism rates between the males and females, this difference was not found to be significant (Log-Rank = .72, df = 1, p = .397). The mean survival time by gender is displayed in Table 8.

A Kaplan-Meier analysis was also conducted to examine the equality of survival distributions for committing violent re-offences by gender, as seen in Figure 2. Like the survival curves for general recidivism, the curves for violent recidivism by gender also appeared to follow different paths. Yet, also like general recidivism, the survival distribution of violent recidivism did not differ significantly between males and females (Log-Rank = 2.75, df = 1, p = .097).

Cox Regression: Gender and Risk Factors/Predictors of Recidivism

Composite variables. Several of the constructs of interest within the data set contained items of similar or overlapping content across different measures. Therefore, attempts were made to test the associations between these variables and to combine them into stronger "composite variables" where appropriate. The individual items were standardized and then a reliability analysis was conducted to assess the proposed composite variables for internal consistency (see Table 9). Those reaching an accepted level of internal consistency, generally above .70 (Devellis, 1991), were entered in the single correlate multivariate cox regression and domain level analysis. The proposed composite variables not having an acceptable coefficient alpha level were not used as composite variables for subsequent analyses. Instead, one of the items of each discarded proposed composite variable was chosen to represent the respective construct. In terms of selection, preference was given to the items derived from the YLS-CMI instrument, over the SAVRY. The YLS-CMI items were given preference as it has been historically associated as a significant measure of adolescent recidivism (Cottle, Lee & Heilbrun, 2001). Furthermore, the SAVRY were developed for the specific purposes of prediction of violent risk, whereas the YLS-CMI is a more generic measure of risk and need in adolescents.

Multicollinearity. In addition to conducting reliability analysis of similar content items, correlations between variables within domains were assessed to ensure that effects of multicollinearity would not unduly influence the results of the cox regression. Variables were examined in bivariate correlations (the results of these correlations are presented in Tables 10, 11 and 12). From these analyses, any variables exhibiting a bivariate correlation greater than .80 would be combined as additional composite variables, since correlations higher than this cut-off are seen as problematic (Berry & Feldman, 1985). The only variables that had correlations

exceeding the .80 were those between the CBCL Total Problems and externalizing score and between the CBCL total problems and internalizing score, which are expected since the total problem score is derived, in part, from the internalizing and externalizing score.

Single Correlate Cox Regression

Preliminary univariate cox regression analyses were conducted on each variable of interest to determine which ones should enter into the multivariate model. A univariate level analysis of the variables would facilitate a direct examination of the strength of the individual correlates, since the correlates would not be in competition with other variables as would be the case in a multivariate method. The variables were examined separately for the males and females. Correlates that exceeded the significance level of .05, an odds ratio greater than 1 or less than 1 and having a confidence interval that did not include the value of 1.0 were deemed as potentially clinically-significant.

From the preliminary analyses for the males, nine variables were selected and entered into the multivariate cox regression, resulting in construction of a parsimonious model for adolescent male recidivism. These nine variables were physical abuse, emotional abuse, neglect, substance abuse problems, suicide attempts, poor mother-child relationship, poor parental management, exposure to family violence and strong attachment and bonds. The results of the univariate cox regressions for males are presented in Table 13.

Since the number of female recidivists was much lower than for the males and the number of variables being examined were same for both genders, less stringent criteria was used to assess significance in the univariate cox analyses for females so as to avoid type II error. Only the internalizing variable for females appeared significant (OR= .94, CI= .88-.99, p= .031), but

caution should be exercised when interpreting this finding since this variable's upper 95% confidence interval value was very close to one (see Table 14).

The results of the forward stepwise (likelihood ratio) multivariate cox regression for the males are displayed in Table 15. Using the same criteria for odds ratios and confidence intervals, it was found that a poor mother-child relationship, substance abuse problems and poor parental management made a significant contribution to the initial model (-2 Log likelihood= 164.70). The poor mother-child relationship variable entered first (-2 Log likelihood= 156.16, G^2 (1)= 8.54, p = .003), substance abuse entered second (-2 Log likelihood= 145.59, G^2 (2) = 19.10, $p <$ .001) and finally poor parental management (-2 Log likelihood= 140.15, G^2 (3) = 24.55, $p <$ .001). For adolescent males, the probability of re-offending is increased to over three times if the youth male has a poor relationship with his mother (OR = 3.43, CI = 1.32-8.87). Probability of re-offending is also increased to about 33% when the youth experiences substance abuse problems (OR = 1.33, CI = 1.10-1.61) and to over two times when there is poor parental management in the youth's home (OR = 2.23, CI = 1.1-4.5). A parsimonious model was not constructed for females as only the internalizing variable was found to make a significant contribution to the initial model (initial model: -2 Log likelihood = 219.34, parsimonious: -2 Log likelihood= 213.65, G^2 (1) = 5.69, p = .017). With each unit increase in internalizing problems for the CBCL, female recidivism decreased by about 7% (OR = .936, CI = .882-.994). None of the other variables (including those significantly associated with adolescent male recidivism) were found to be significant predictors of recidivism in the females.

Domain Level Analysis

To construct each domain, the single correlates used in the previous analysis were first standardized and then combined with risk factors or composite variables within the same

respective area. As a result, three summation variables were formed: individual, family and peer/interpersonal. Those relating to mental health, developmental or other individual factors formed the "individual" domain. Those relating to family relationships, household structure or family violence formed the "family" domain. And finally, delinquent peer associations and strong attachment and bonds formed the "peer/interpersonal relations" domain. This procedure is similar to previous research (e.g. Walrath et. al., 2003; Day, 1998) which has examined the generic/cumulative influence of psychosocial domains on criminal patterns of male and female youths. A criminal domain also was formed, which consisted of age at time of initial offense and type of initial offence, but it was not analyzed in conjunction with the three other domains as the domain analysis was to be a comparison of risk factors. The complete organization of summation variables, risk factors are detailed in Table 16.

After the summation variables were constructed they were entered into two cox regression models; one for males and one for females. The results of these regressions (including –2 log likelihood values) are displayed in Tables 17 and 18. For the males, the individual (G^2 (1, N =37) = 11.35, p = .001, OR = 1.20, CI = 1.08 – 1.33) and family domain (G^2 (1, N = 37) = 11.51, p = .001) were both found to make a significant contribution to the model. For females, the peers domain made a small, but significant contribution (G^2 (1, N = 15) = 4.29, p = .038). When the domains were re-entered in a forward stepwise (likelihood ratio) cox regression, only the individual domain in the males' regression model remained significant (OR = 1.20, CI = 1.08 – 1.33, p = .001).

Discussion

Gender and Mental Health Needs

The results of this study indicated that while many of the males and females in the sample were proportionally similar in terms of ethnicity, age, location of residence, prior mental health and child welfare involvement, there were some important areas that differed in incidence between the genders (see Tables 1 and 2). Females seemed to experience a greater amount of physical, emotional and sexual abuse than their male counterparts. According to the data provided, 81.3% of the females experienced some form of maltreatment compared to 53.4% of the males. As noted, this difference was significant with a large effect size. This finding, however, is not surprising, since the high incidence of abuse experienced by females is well documented (e.g. McCabe et. al., 2002). In addition to reporting a greater degree of abuse, females also reported experiencing a greater level of substance abuse difficulties. Although females also experienced a greater proportion of other adverse historical factors like neglect and family violence, only the abuse variables, substance abuse problems and having a poor father-child relationship differed significantly across gender. With respect to criminal history, males committed a greater amount of sexual offences but were comparable to the females on property, person and other offences.

There were also gender differences in self-reported and parent reported behavioural and emotional symptoms. Although male and female youth group means varied on several of the CBCL syndrome and summary scales, the only significant gender difference occurred in delinquent behaviour. On average, parents of adolescent females reported them to exhibit clinical levels of delinquent behaviour, while the males scored in the borderline clinical range.

On the YSR, females rated themselves significantly higher than the males on delinquent behaviour. In addition to this difference, however, the females also scored, on average, higher

on the anxious/depressed, aggressive behaviour syndrome scales and on the three broadband (summary) scales.

In comparing YSR and CBCL scores, there is evidence to suggest that there is a high level of agreement between the two measures on externalizing symptoms, but less so on internalizing symptoms (Edelbrock et. al., 1986). This is consistent with the current findings as females scored significantly higher on delinquent behaviour on both the YSR and the CBCL, but significant differences in internalizing symptoms were only found in the YSR. This may imply that the parents are better able to report on externalizing symptoms since they are more observable, whereas the adolescents are better able to report their internalizing experiences. Alternatively, there is recent evidence to suggest that parental and adolescent disagreement on psychopathology, as measured by the YSR and CBCL, can be a marker for later adverse adolescent outcome (Ferdinand, Van der Ende & Verhulst, 2004). Nevertheless, the results of the present study are consistent with the delinquency literature that proposes that female youths experience greater levels of internalizing symptoms (Aalsma & Lapley, 2001; Cauffman et. al., 2004; Teplin et. al., 2002), and perhaps more externalizing behaviours than the males (Day, 2002; Timmons-Mitchell et. al., 1997). Several variables have been identified in this study that appear particularly important to the female adolescent offender profile. The mental health needs of the females, as signified by the degree mental health problems as well as their increased experience of adverse historical factors, are great and appear dissimilar to the male youths. The results of this study provide some direction to mental health and allied professionals involved in intervention and judicial aspects of the females' lives.

Gender Differences in Recidivism

In comparing the criminal recidivism rates of the males and females, it was found that females had a lower rate of general and violent recidivism, but a statistical difference was only found in the rate of violent re-offending. Over one third of the male youth committed a violent re-offence during the allotted follow-up compared with only about 17% of the females. This difference exists despite the increase in rates of female youth committing violent crimes over the last two decades (Odgers & Morretti, 2002). A gender difference also exists in violent crime according to recent Canadian estimates, where male youths are responsible for 14% of violent crime, while females are only responsible for 5% of it (Stevenson et. al., 1998).

On examination of the survival rates of both genders, it appeared that the males and females did not follow the same path of recidivism. While the survival distributions of both genders were comparable for about the first 10 months of release, the males began to re-offend at higher rates than the females. This difference, however, did not prove to be significant. And although a chi-square analysis of violent recidivism between the genders showed the males to commit a significantly higher proportion of violent re-offences this difference did not remain significant in the Kaplan-Meier analysis when exact survival times were taken into account. The current findings also showed that males and females did not differ significantly with respect to several of the criminal variables examined (see Table 1). This seems to lend support to Kempf-Leonard and Tracy's (2000) claim that the gender difference in offending is of degree and not kind. Even criminal chronicity was similar across gender, where 24.1% of the males had three or more convictions compared to 20% of the females. However, this is strikingly different from Statistics Canada estimates which show incidence of three or more prior convictions of male youths double that of the females (Stevenson et. al., 1998). The discrepancy in estimates, however, might have occurred since the size of the current court-referred sample is much smaller

than the larger population samples compared to (Stevenson et. al., 1998) and moreover, may represent a more specific group of offenders.

Despite the lack of gender differences, when more specific analyses were conducted, several differences arose that were distinct to gender. The univariate cox regression analyses revealed that of the variables examined, only internalizing problems appeared to be a significant correlate of recidivism in females. In fact, internalizing problems appeared to have a deterring effect on female recidivism. This is consistent with Wiesner's (2003) longitudinal study that found depression symptoms in females resulted in initial criminal activity but a later decline in offending. According to some research, the profile of the female adolescent offender involves experiencing high levels of emotional disturbance (e.g. Day, 2002; Teplin et. al., 2002) and maladaptive experiences (e.g. Aalsma & Lapley, 2001), sometimes of greater magnitude than the males. However, the current study suggests that female youths who re-offend seem to be less affected by anxious and depression symptoms than their female non-repeat offending peers. Still, more work needs to be done in constructing a clearer picture of the female young recidivist by examining more intricate and subtle differences between the two types of female youths.

In males, a greater number of variables seemed to be influential. The parsimonious model of male recidivism (constructed from the multivariate cox regression) revealed that a poor mother-child relationship, substance abuse problems and poor parental management were significant risk factors for future recidivism. Of these three correlates, the relationship the male youths have with their mothers appeared the strongest, followed by experiencing substance abuse problems and poor parental management. This indicates that individual factors as well as the family context have an important impact on the outcome of male youths.

There is support in the literature for the association between family relationships and re-offending in youths (Carr & Vandiver, 2001; Cottle, Lee & Heilbrun, 2001). Yet, the literature suggests that familial conflict is more prevalent in female youths (Chesney-Lind, 1989; 1997; Hoge, Andrews & Leschied, 1994; Aalsma & Lapley, 2001), a finding which is confirmed by the results of this study (see Table 1). Paradoxically, though females experience more family problems and impaired relationships with their mothers; the results of the current study suggest that it influences the criminal pattern of the male youths to a greater degree. Given that both the mother-child relationship and parental management variables emerged as influential for male youth recidivism, perhaps this may signify earlier problems of attachment in the males. Furthermore, positive mother child relationships have been associated with protecting the adolescent from negative influences of peers and attenuating problem behaviours displayed by the youth (Mason, Cauce, Gonzales & Hiraga, 1994).

Perhaps more research is needed which investigates the parental characteristics, personalities and parenting styles that offending youths are exposed to. It is conceivable that there is an ideal parenting style that is warranted for children with particular temperaments or behavioural problems and corresponding interventions may help improve adolescent outcome. Maybe even increased social supports for adolescent males with problematic family situations may act as protective factors for the youths and disengage the youth from negative influences and criminal paths.

Individual, Family and Peer Collective Influences

Analyses of the cumulative impact of the correlates from the individual, family and peer domains were also conducted to determine if a collective influence of the various risk factors existed. Consistent with the findings of the univariate cox regression, the individual and family

domains appeared to make significant contributions to recidivism in males, univariately. Although neither the individual or family domains (each containing correlates believed to be important in female delinquency) were significant to female re-offending, the peer domain did emerge as moderately significant in the female model. However, after a forward stepwise (likelihood ratio) cox regression of the domains, of all the significant findings, only the individual domain for male recidivism remained significant.

In summary, while the current study is limited by the small size of the female sample, it does make some important contributions to the area of adolescent crime and gender differences. While there are various contradictions in the field, the results of the current study can be employed in an attempt to reconcile these inconsistencies. In isolation, studies in adolescent recidivism and gender differences appear to take multiple viewpoints and perspectives. When, however, noting specific limitations and advantages of the independent research initiatives, the body of work does appear to fit together. While studying adolescent delinquency separate from developmental, historical and relational correlates, males and females appear to travel a similar criminal path. These correlates, however, provide important information not only to potentially influential antecedents to crime, but also speak to the unique pattern of mental health concerns and needs of the different genders. The collective findings of the present study lend support to this argument.

Limitations

Non-signficant findings. Unexpectedly, abuse, a variable deemed by the literature as being important in female delinquency (Day, 1998; Herrera & McCloskey, 2001) as well as recidivism (Funk, 1999; Archwamety & Katsiyannis, 1998), did not distinguish the female recidivists from the non-recidivists. Although, the sample size was large enough to demonstrate

a significant gender difference in experiencing abuse and maltreatment, perhaps a larger sample would also allow interaction effects to be examined and thus, provide a better medium to study more subtle influences of abuse on recidivism in female youths.

Other studies have found a gender difference in age of criminal onset (e.g. Fergusson & Horwood, 2002), however age was not significantly associated with either male or female criminal behaviour in this sample (see Table 1). Perhaps using a longer follow-up period (e.g. Kempf-Leonard & Tracy, 2000) may provide better data to test the significance of age in adolescent offending. However, with larger population samples it is more difficult to obtain information on the many predictors that should be studied in this area of research.

Analytic Procedures. Survival analysis sometimes has taken a back seat to logistic regression in analytical procedures for studying adolescent crime. Survival analysis is an ideal statistical method to capture the important influences on recidivism rates. However there are several important limitations to this approach. There is substantially more effort required in obtaining survival times than a simple dichotomous indicator of recidivism. Also, like other statistical procedures, survival analysis works optimally with large sample sizes, covariates with strong effects, and equal group sizes. Furthermore, the results of these analyses are influenced by the amount of censoring that is contained in the sample as well as the order of entry of the variables into the regression. There are also specific issues to consider when using and interpreting the analyses. One must consider specific elements of the study sample. Is there normality in the distribution? Certain characteristics of the current sample, such as the adolescents being court-referred and recruited from Northwestern Ontario, may limit the generalizability of the results. Particularly since adolescents referred for court-ordered mental health assessments are believed to experience a greater severity of problems than delinquent

youths that have not been referred for such assessments (Jack & Ogloff, 1997). It is plausible that the youths who commit crimes who are also not referred for mental health assessments exhibit a different criminal path and may have different antecedents to those paths than the youths in this study.

Also, it is important to be cognizant that the censored cases represented youth that were not charged or convicted of a criminal re-offence and it is plausible that they may have engaged in unreported criminal activity. Furthermore, the data for the youths varied in completeness depending on which variable was looked at. Recidivism data was not available for 3 of the 133 participants, thus, it is likely that the missing cases would not have an overwhelming influence on the results of this study. Yet, for much of the psychological instruments and historical information the missing cases ranged from 17 to over 40, and it is conceivable that inclusion of the missing data may have influenced the significance of the findings.

There are ways to compensate for the missing information in a data set, one popular method being maximum likelihood estimation (MLE). This method has been used in logistic regression for recidivism data (Tollett & Benda, 1999). However, there are biases associated with MLE and the literature available on MLE lacks articulated guidelines on the sample size requirements and optimal time intervals (Langner, Bender, Lenz-Tonjes, Kuchenhoff & Blettner, 2003). Based on the varying follow-up intervals of the sample and a lack of guidance in previous literature on using parameter estimation with survival distributions of recidivism, missing data was not estimated in the current study. While data estimation may be a useful method of accounting for missing data there are limitations that go along with these methods and prior literature that should be considered when considering whether or not parameters should be estimated in a particular data set.

MANOVA, like survival analysis, also has its limitations. While MANOVA is traditionally used for experimental research, it has been employed in non-experimental samples such as the one used in this study (e.g. Fleming, Mullen, Sibthorpe & Bammer, 1999; Blankenship et. al., 1998). The usefulness of MANOVA can be limited by particular sample characteristics, such as normality, homogeneity of covariance and linearity (Tabachnick & Fidell, 2001).

Examining recidivism. In addition to limitations of the samples and procedures of survival analysis, there are limitations in the area of recidivism. While there is literature examining recidivism, there is little that speaks to gender differences. Assuming that repeat-offender youths are a homogenous and unvaried group is a risky assumption to make. While there are indications in the field as to what the gender differences in criminal behaviour are, several of these findings are contradicted and unreplicated. Many of the studies in the field use different methodological approaches to adolescent recidivism. Several studies also fail to report the power and effect sizes of their findings. For these reasons it is difficult to establish connections in the literature resulting in stagnated growth of the area.

In addition, recidivism was measured by the date of conviction and not the date of the repeat offence. Thus, a confounding influence on the results may be the differences in times assigned for youths to appear in court. Date of the repeat offence, while would have been a more precise measure of recidivism would be more difficult to obtain, as obtaining such data may rely on the adolescents' willingness to reveal such information.

In the study of adolescent recidivism, there are several confounds that are difficult to control for. In particular, unique experiences the youth may have can mediate their criminal paths. For example, youths that are amenable to treatment and received intervention may exhibit

lower recidivism rates than youths who are equally amenable to treatment but for unknown reasons did not receive treatment. Moreover, a youth's unique personal experiences in custody may also have influenced their criminal patterns. As stated, there is evidence to suggest that females are treated differently in the juvenile justice system (Hoge, Andrews and Leschied, 1994; Reitsma-Street, 1991), but also, there may be additional experiences that impact criminal behaviour that are exclusive to an individual.

Future Directions and Implications

In addition to further research on gender differences in adolescent recidivism, future research may consider examining the interactions between variables and moderating effects. While there is merit in identifying whether a particular variable is significantly related to outcome, it is important to examine the inter-relationships between variables (Hoge, Andrews & Leschied, 1996). By better understanding the direct influence of factors on adolescent recidivism, intervention, dispositions and preventative measures can address these subtleties.

Gender differences in adolescent recidivism is a neglected area of study. While there are findings that speak to general recidivism, it appears to be increasingly clear that pooling male and female youths together in forensic research is inappropriate, as the pattern of offending between males and females is comparable, but there appear to be important differences in which factors predict their future criminal behaviour. Researchers need to seek out larger samples of female youths that commit crimes and obtain recidivism data for these participants. In addition, a wide array of factors relating to the females' developmental history, mental health, family environment, peer relations, and other relevant areas need to be studied alongside these females so that among the exploratory studies uniform risk and protective factors arise. These studies also need to promote development in this field by keeping a relative level of consistency in

methodology and report important statistics that facilitate between-study comparisons. Attempts were made in the present study to provide and interpret measures of effect size, which would allow the results to be evaluated in the context of the existing literature. Furthermore, enabling an integration of research in the field benefits future researchers, since they will be able to formulate more precise hypotheses.

Examining differential mental health needs for adolescent males and females is important, since it can help develop more appropriate interventions and dispositions to assist these youths. The results of this study suggest that mental health needs of offending youths do, in fact, differ by gender. In addition, the degree to which risk factors in the adolescents' environments effect criminal behaviour also differs across gender. As such, preventative measures can be strengthened by illustrating and attending to the specific adolescent psychological and social context factors.

References

Aalsma, M. C. & Lapsley D. K. (2001). A typology of adolescent delinquency: sex differences and implications for treatment. *Criminal Behaviour and Mental Health*, 11(3), 173-191.

Achenbach, T. M. (1991a). *Manual for the Child Behavior Checklist.* Burlington, VT: University Associates in Psychiatry.

Achenbach, T. M. (1991b). *Manual for the Youth Self-Report Form.* Burlington, VT: University Associates in Psychiatry.

Achenbach, T. M. (1999). The Child Behavior Checklist and related instruments. In M. E. Maruish, (Ed). (1999). *The use of psychological testing for treatment planning and outcomes assessment* (2nd ed.) (pp. 429-466). Mahwah, NJ: Lawrence Erlbaum Associates.

Ahnlund, K. & Frodi, A. (1996). Gender differences in the development of depression. *Scandinavian Journal of Psychology, 37(3),* 229-237.

American Psychiatric Association. (2000). *The diagnostic and statistical manual of mental disorders* (4th edit, text revision). Washington, DC: Author.

Archwamety, T. & Katsiyanis, A. (1998). Factors related to recidivism among delinquent females at a state correctional facility. *Journal of Child and Family Studies*, 7(1), 59-67.

Barbour, A. (1996). The relationship of socioeconomic inclusion to delinquent behaviour in adolescent females. *Journal of Group Psychotherapy, Psychodrama and Sociometry, 48,* 159-161.

Bartel, P., Borum, R., & Forth, A. (2000). *Structured Assessment for Violence Risk in Youth (SAVRY).* Consultation Edition. Author.

Berry, W. D. & Feldman, S. (1985). *Multiple regression in practice.* London: Sage Publications.

Blankenship, B. L., Eells, G. T., Carlozzi, A. F., Perry, K. & Barnes, L. B. (1998). Adolescent client perceptions and reactions to reframe and symptom prescription techniques. *Journal of Mental Health Counseling, 20(2),* 172-182.

Bloom, B., Owen, B., Dechenes, E. P. & Rosenbaum, J. (2002). Moving toward justice for female juvenile offenders in the new millennium: modeling gender-specific policies and programs. *Journal of Contemporary Criminal Justice, 18(1),* 37-56.

Borum, R., Bartel, P. & Forth, A. (2002). *Manual for the Structured Assessment of Violence Risk in Youth (SAVRY).* Tampa, FL: University of South Florida.

Buhrmester, D. & Furman, W. (1987). The development of companionship and intimacy. *Child Development, 58(4),* 1101-1113.

Calhoun, G., Jurgens, J. & Chen, F. (1993). The neophyte female delinquent: a review of the literature. *Adolescence,* 28(110), 461-471.

Campbell, A. (1987). Self definition by rejection: The case of gang girls. *Social problems, 34(5),* 451-466.

Carr, M. B. & Vandiver, T. A. (2001). Risk and protective factors among youth offenders. *Adolescence, 36(143),* 409-426.

Casper, R. C., Belanoff, J. & Offer, D. (1996). Gender differences, but no racial group differences, in self-reported psychiatric symptoms in adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry, 35(4),* 500-508.

Catchpole, R. E. H. & Gretton, H. M. (2003). The predictive validity of risk assessment with violent young offenders. *Criminal Justice and Behavior, 30(6),* 688-708.

Cauffman, E., Feldman, S. S., Waterman, J. & Steiner, H. (1998). Posttraumatic stress

disorder among female juvenile offenders. *American Academy of Child and Adolescent Psychiatry, 37(11)*, 1209-1216.

Cauffman, E., Piquero, A. R., Broidy, L., Espelage, D. L. & Mazerole, P. (2004). Heterogeneity in the association between social-emotional adjustment profiles and deviant behavior among male and female serious juvenile offenders. *International Journal of Offender Therapy and Comparative Criminology, 48(2),* 235-252.

Chandy, J. M., Blum, R. W. & Resnick, M. D. (1996). Gender-specific outcomes for sexually abused adolescents. *Child Abuse and Neglect, 20(12),* 1219-1231.

Chesney-Lind. (1997). *The female offender.* Thousand Oaks, CA: Sage.

Chesney-Lind (1989). Girls' crime and woman's place: Toward a feminist model of female delinquency [Special issue]. *Crime and Delinquency, 35(1)*, 5-29.

Cohen, J. (1977). *Statistical power analysis for the behavioral sciences*. New York: Academic Press.

Cottle, C. C., Lee, R. J., & Heilbrun, K. (2001). The prediction of criminal recidivism in juveniles: a meta-analysis. *Criminal Justice and Behaviour*, *28(3),* 367-394.

Day, D. (1998). Risk for court contact and predictors of an early age for a first court contact among a sample of high risk youths: a survival analysis approach. *Canadian Journal of Criminology, 40(4)*, 421-446.

Day, D. (2002, November). The intellectual, social emotional and behavioural functioning of youth at Syl Apps Youth Centre, Oakville, Ontario. Unpublished manuscript.

DeFronzo, J. & Pawlak, R. (1993). Being female and less deviant: the direct and indirect effects of gender on alcohol abuse and tobacco smoking. *Journal of Psychology, 127(6),* 639-647.

DeVellis, R. F. (1991). *Scale Development.* Newbury Park, NJ: Sage Publications.

Duncan, R. D., Kennedy, W. A. & Patrick, C. J. (1995). Four-factor model of recidivism in male juvenile offenders. *Journal of Clinical Child Psychology, 24(3),* 250-257.

Edelbrock, C., Costello, A. J., Dulcan, M. K., Conover, N. C. & Kalas, R. (1986). Parent-child agreement on child psychiatric symptoms assessed via structured interview. *Journal of Child Psychology and Psychiatry, 27(2),* 181-190.

Ferdinand, R. F., van der Ende, J. & Verhulst, F. C. (2004). Parent-adolescent disagreement regarding psychopathology in adolescents from the general population as a risk factor for adverse outcome. *Journal of Abnormal Psychology, 113(2),* 198-206.

Ferguson, D. M. & Horwood L. J. (2002). Male and female offending trajectories. De*velopment and Psychopathology, 14,* 159-177.

Fleming, J., Mullen, P. E., Sibthorpe, B. & Bammer, G. (1999). The long-term impact of childhood sexual abuse in Australian women. *Child Abuse & Neglect, 23(*2), 145-159.

Funk, S. J. (1999). Risk assessment for juveniles on probation: a focus on gender. *Criminal Justice and Behaviour, 26(1),* 44-68.

Goldstein, N. E., Arnold, D. H., Weil, J., Mesiarik, C. M., Peushold, D., Grisso, T. et al. (2003). Comorbid symptom patterns in female juvenile offenders. *International Journal of Law and Psychiatry, 26(5),* 565-582.

Herrera, V. M. & McCloskey, L. A. (2001). Gender differences in the risk for delinquency among youth exposed to family violence. *Child Abuse and Neglect, 25(8),* 1037-1051.

Hoge, R. D. (2002). Standardized instruments for assessing risk and need in youthful offenders. *Criminal Justice and Behaviour, 29(*4), 380-396.

Hoge, R. D. & Andrews, D. A. (2002). *The Youth Level of Service/Case Management Inventory*

Manual and Scoring Key. Toronto, ON: Multi-Health Systems.

Hoge, R. D., Andrews, D. A. & Leschied, A. W. (1994). Tests of three hypotheses regarding the predictiors of delinquency. *Journal of Abnormal Child Psychology, 22(5),* 547-559.

Hoge, R. D., Andrews, D. A. & Leschied, A. W. (1995). Investigations of variables associated with probation and custody dispostions in a sample of juveniles. *Journal of Clinical Child Psychology, 24(3),* 279-286.

Hoge, R. D., Andrews, D. A. & Leschied, A. W. (1996). An investigation of risk and protective factors in a sample of youthful offenders. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 37(4),* 419-424.

Hoge, R. D., Andrews, D. A. & Leschied, A. W. (2002). *The Youth Level of Service/Case Management Inventory*. Toronto, ON: Multi-Health Systems.

Hoyt, S. & Scherer, D. G. (1998). Female juvenile delinquency: Misunderstood by the juvenile justice system, neglected by social science. *Law and Human Behaviour, 22(1),* 81-107.

Hubbard, D. J. & Pratt, T. C. (2002). A meta-analysis of the predictors of delinquency among girls. *Journal of Offender Rehabilitation, 34(3),* 1-13.

Jack, L. A., & Ogloff, J. R. P. (1997). Factors affecting the referral of young offenders for medical and psychological assessment under the young offender act. *Canadian Journal of Criminology, 39,* 247-273.

Kataoka, S. H., Zima, B. T., Dupre, D. A., Moreno, K. A., Yang, X. & McCracken, J. T. (2001). Mental health problems and service use among female juvenile offenders: their relationship to criminal history. *Journal of the American Academy of Child and Adolescent Psychiatry, 40(5),* 549-555.

Kempf-Leonard, K. & Tracy P.E. (2000). *The gender effect among serious, violent and chronic*

juvenile offenders: a difference of degree rather than kind. In R.. Muraskin (Ed.), It s a Crime *(2nd ed.) (pp. 453-478).Saddle River, NJ: Prentice Hall.*

Kim, J. Y. S. & Fendrich, M. (2002). Gender differences in juvenile arrestees' drug use, self-reported dependence, and perceived need for treatment. *Psychiatric Services, 53(1),* 70-75.

Langner, I., Bender, R., Lenz-Tonjes, R., Kuchenhoff, H. & Blettner, M. (2003). Bias of Maximum-Likelihood estimates in logistic and Cox regression models: A comparative simulation study (SFB 386 Discussion Paper 362). Retrieved July 2004, from *Statistical Analysis of Discrete Structures* website: http://www.stat.uni-muenchen,de/sfb386/papers/dsp/paper362.pdf

Mason, C. A., Cauce, A. M., Gonzales, N. & Hiraga, Y. (1994). Adolescent problem behaviour: the effect of peers and the moderating role of father absence and the mother-child relationship. *American Journal of Community Psychology, 22*(6), 723-743.

Mazerolle, P. (1998). Gender, general strain and delinquency: an empirical examination. *Justice Quarterly, 15(1),* 65-91.

McCabe, K. M., Lansing, A. E., Garland, A. & Hough, R. (2002). Gender differences in psychopathology, functional impariment, and familial risk factors among adjudicated delinquents. *Journal of the American Academy of Child & Adolescent Psychiatry, 41(7),* 860-867.

Messerschmidt, J. (1993). *Masculinities and Crime.* Lanham, MD: Rowman & Littlefield.

Moffitt, T. E. (1993). Adolescent limited and life course persistent anti-social behaviour: a developmental taxonomy. *Psychological Review, 100(4),* 674-701.

Niarhos, F. J. & Routh, D. K. (1992). The role of clinical assessment in the juvenile court:

predictors of juvenile dispositions and recidivism. *Journal of Clinical Child Psychology, 21,* 151-159.

Obeidallah, D. A. & Earls, F. J. (1999). ***Adolescent Girls: The Role of Depression in the Development of Delinquency***, Washington, D.C., National Institute of Justice.

Odgers, C. L. & Moretti, M. M. (2002). Aggressive and antisocial girls: Research update and challenges. *International Journal of Forensic Mental Health, 1(2)*, 103-119.

Pliszka, S. R., Sherman, J. O., Barrow, M. V. & Irick, S. (2000). Affective dirsorder in juvenile offenders: A preliminary study. ***American Journal of Psychiatry, 157(1)***, 130-132.

Quinsey, V. L., Skilling, T. A., Lalumiere, M. L. & Craig W. M. (2004). ***Sex differences in aggression and female delinquency.*** In *Juvenile delinquency: Understanding the origins of individual differences*. (pp. 115-136). Washington, DC: American Psychological Association.

Quist, R. M. & Matshazi, D. G. M. (2000). The child and adolescent functional assessment scale (CAFAS): a dynamic predictor of juvenile recidivism. *Adolescence, 35(137),* 181-192.

Rantakallio, P., Myhrman, A. & Koiranen, M. (1995). Juvenile offenders, with special reference to sex differences. *Social Psychiatry and Psychiatric Epidemiology, 30(3)*, 113-120.

Reitsma-Street, M. (1991). Justice for Canadian girls: A 1990's update. *Canadian Journal of Criminology, 26(2)*, 335-363.

Reitsma-Street, M. & Artz, S. (2000). *Girls and crime.* In J. A. Winterdyk (Ed.), *Issues and perspectives on young offenders in Canada* (pp. 61-87). Canada: Harcourt.

Rhodes, J. E. & Fischer, K. (1993). Spanning the gender gap: gender differences in delinquency among inner-city adolescents. *Adolescence, 28(112),* 879-889.

Rosenthal, R. (1980). Summarizing statistical signficance. In R. Rosenthal, (Ed.). *New directions for methodology of social and behavioral science: Quantitative assessment of research domains.* San Francisco: Jossey-Bass.

Saner, H. & Ellickson, P. (1996). Concurrent risk factors for adolescent violence. *Journal of Adolescent Health, 19,* 94-103.

Steffensmeier, D. & Allen, E. (1998). Gender and crime: toward a gendered theory of female offending. *Annual Review of Sociology, 22,* 459-487.

Stevenson, K., Tufts, J., Hendrick, D. & Kowalski, M. (1998). A profile of youth justice in Canada (Catalogue No. 85-544-XPE). Ottawa, ON: Statistics Canada.

Tabachnick, B. G. & Fidell, L. S. (2001). *Using multivariate statistics.* (4th ed.). Boston: Allyn & Bacon.

Teplin, L. A., Abram, K. M., McClelland, G. M., Dulcan, M. K. & Mericle, A. A. (2002). Psychiatric disorders in youth in juvenile detention. *Archives of General Psychiatry, 59(12),* 1133-1143.

Timmons-Mitchell, J., Brown, C., Schulz, S. C., Webster, S. E., Underwood, L. A. & Semple, W. E. (1997). Comparing the mental health needs of female and male incarcerated juvenile delinquents. *Behavioral Sciences and the Law, 15,* 195-202.

Tollett, C. L. & Benda, B. B. (1999). Predicting "survival" in the community among persistent and serious juvenile offenders: A 12-month follow-up study. *Journal of Offender Rehabilitation, 28(3-4),* 49-76.

Walrath, C., Ybarra, M., Holden, W., Manteuffel, B., Santiago, R. & Leaf, P. (2003). Female offenders referred for community-based mental health service as compared to other service-referred youth: correlates of conviction. *Journal of Adolescence, 26(1),* 45-61.

Wierson, M. & Forehand, R. (1995). Predicting recidivism in juvenile delinquents: the role of mental health diagnoses and the qualifications of conclusions by race. *Behaviour Research and Therapy, 33(1),* 63-67.

Wiesner, M. (2003). A longitudinal latent variable analysis of reciprocal relations between depressive symptoms and delinquency during adolescence. *Journal of Abnormal Psychology, 112(*4), 633-645.

Wilkinson, L., & APA Task Force on Statistical Inference. (1999). Statistical methods in psychology journals: Guidelines and explanations. *American Psychologist, 54,* 594-604.

Winters, K. (1991). *Manual for the Personal Experience Screening Questionnaire (PESQ).* Los Angeles: Western Psychological Services.

Table 1

Demographic and Offence Characteristics by Gender

Characteristic	Males	Females
Residence		
Thunder Bay	64 (78%)	40 (80%)
Other	18 (22%)	10 (20%)
Ethnicity		
Native-Canadian	26 (31.3%)	16 (32%)
Caucasian	57 (68.7%)	34 (68%)
Age (years) at Assessment (mean, SD)	14.88 (1.48)	15.03 (1.14)
Family Poverty Level		
Below Poverty Level	28 (43.1%)	16 (39.0%)
Above Poverty Level	37 (56.9%)	25 (61.0%)
Prior Individual/Family Counselling	61 (82.4%)	38 (80.9%)
Prior Residential Mental Health Involvement	19 (26.4%)	11 (25%)
Current Child Aid Society Involvement	17 (23.0%)	15 (33%)
Prior Children Aid Society Involvement	33 (44.6%)	19 (43.2%)
Prior Foster Home Placement	20 (27.0%)	8 (18.6%)
Other Mental Health Involvement Not Already Specified	11 (15.5%)	9 (21.4%)
Parental Substance Abuse		
None	31 (44.9%)	18 (41.9%)
Moderate-Severe	10 (14.5%)	7 (16.3%)

Characteristic	Males	Females
Severe	28 (40.6%)	18 (41.3%)
History of Physical Abuse *		
None	44 (62.9%)	23 (52.3%)
Moderate	19 (27.1%)	7 (15.9%)
Severe	7 (10.0%)	14 (31.8%)
History of Emotional Abuse *		
None	38 (55.1%)	12 (29.3%)
Moderate	8 (11.6%)	10 (24.4%)
Severe	23 (33.3%)	19 (46.3%)
History of Sexual Abuse *		
Yes	12 (17.9%)	15 (34.9%)
No	55 (82.1%)	28 (65.1%)
History of Family Violence		
None	38 (53.5%)	17 (37.8%)
Moderate	14 (19.7%)	10 (22.2%)
Severe	9 (26.8%)	18 (40.0%)
Some Form of Maltreatment (presence of at least one maltreatment factor, ie. abuse or neglect)**	31 (53.4%)	26 (81.3%)
Type of Present Offence		
Sexual ***	26 (31.3%)	1 (2.0%)
Person	37 (44.6%)	28 (56.0%)

Characteristic	Males	Females
Property	30 (36.1%)	20 (40.0%)
Other	25 (30.1%)	22 (44.0%)
Presence of Past Criminal Charges	36 (48.0%)	13 (31.0%)
Number of Past Charges (mean, SD)	1.57 (2.64)	1.38 (1.98)
More than Three Convictions	20 (24.1%)	10 (20.0%)
More than Two Failures to Comply	14 (16.9%)	8 (16.0%)
Prior Probation	16 (19.3%)	11 (22.0%)
Prior Custody	24 (28.9%)	13 (26.0%)
Previously in Secure Custody	2 (2.7%)	2 (4.5%)
Previously in Open Custody	14 (18.9%)	7 (15.6%)

Note. * $p < .05$,** $p < .01$, *** $p < .001$; Some form of maltreatment computed by summing the three abuse and one neglect variable. All scores over 1 were counted.

Table 2.

Sample Characteristics Based on Selected Items from the YLS-CMI and SAVRY

Characteristic	Males	Females
Poor Father Child Relationship (YLS-CMI) *	28 (38.9%)	25 (59.5%)
Poor Mother Child Relationship (YLS-CMI)	20 (27.8%)	19 (45.2%)
Inadequate Supervision (YLS-CMI)	17 (20.5%)	15 (30.0%)
Inappropriate Discipline (YLS-CMI)	9 (10.8%)	10 (20.0%)
Victim of Neglect (YLS-CMI)	12 (16.7%)	9 (22.0%)
Substance Abuse Difficulties (SAVRY)*		
Low	35 (43.8%)	10 (20.4%)
Moderate	19 (23.8%)	13 (26.5%)
High	26 (32.5%)	26 (53.1%)
Suicide Attempts (YLS-CMI)	10 (13.9%)	9 (22.0%)
Peer Delinquency (SAVRY)		
Low	32 (40.0%)	11 (22.4%)
Moderate	24 (30.0%)	23 (46.9%)
High	24 (30.0%)	15 (30.6%)

Note. * $p < .05$; YLS-CMI: males ($n = 72$), females ($n = 24$, except Victim of Neglect and Suicide Attempts, where $n = 41$); SAVRY: males ($n = 80$), females ($n = 49$; included one censored case)

Table 3

CBCL Syndrome and Summary Scale Mean Scores by Gender

	Males			Females		
Syndrome/Summary Scale	*n*	*M*	*SD*	*n*	*M*	*SD*
Withdrawn	58	63.17	11.42	33	61.27	9.19
Som Complaints	58	62.10	9.51	33	61.97	9.97
Anx/Depressed	58	63.52	10.75	33	63.61	11.20
Social Problems	58	63.71	12.24	33	60.39	7.72
Thought Problems	58	61.10	10.33	33	60.94	9.88
Attention Problems	58	65.88	11.95	33	65.06	10.57
Delinquent Behaviour	58	70.97	11.59	33	77.73	8.92
Aggressive Behaviour	58	69.62	14.05	33	72.52	10.31
Externalizing	58	69.41	13.43	33	74.44	7.99
Internalizing	58	63.56	11.40	33	63.42	10.71
Total Problems	58	67.72	13.07	33	70.82	9.14

Table 4

Multivariate Analysis of Variance for CBCL Scales by Gender

CBCL Syndrome/Summary Scale	*df*	*F*	*p-value*	η^2	*obs* β
Withdrawal Symptoms	1	.67	.417	.007	.13
Somatic Complaints		.01	.950	.000	.05
Anxiety/Depression Symptoms		.00	.970	.000	.05
Social Problems		1.97	.164	.022	.28
Thought Problems		.01	.941	.000	.05
Attention Problems		.11	.744	.001	.06
Delinquent Behaviour *		8.38	.005	.086	.82
Aggressive Behaviour		1.07	.304	.012	.18
Total Problems Behaviour		1.44	.233	.016	.22
Internalizing Behaviour		.00	.953	.000	.05
Externalizing Behaviour		3.81	.054	.041	.49
Error	89				

Note. * $p < .01$

Table 5

Youth Self-Report Syndrome and Summary Scale Mean Score by Gender

	Males			Females		
Syndrome Scale	*n*	*M*	*SD*	*n*	*M*	*SD*
Withdrawn	70	55.88	8.05	42	57.60	7.02
Som Complaints	69	57.06	10.72	42	60.90	12.17
Anx/Depressed	70	56.80	9.20	42	62.79	13.11
Social Problems	70	57.20	8.40	42	59.40	9.05
Thought Problems	70	54.59	8.11	42	57.05	8.49
Attention Problems	70	57.42	9.83	42	61.24	10.20
Delinquent Behaviour	70	64.32	10.97	42	72.55	10.20
Aggressive Behaviour	70	57.87	9.36	42	64.48	10.47
Externalizing	69	58.86	11.67	42	68.83	11.35
Internalizing	69	52.78	13.99	42	60.76	13.55
Total Problems	69	56.00	13.13	42	64.60	13.34

Table 6

Multivariate Analysis of Variance of YSR Scales by Gender

YSR Syndrome/Summary Scale	*df*	*F*	*p-value*	η^2	*obs* β
Withdrawal Symptoms	1	1.29	.257	.012	.20
Somatic Complaints		3.03	.084	.027	.41
Anxiety/Depression Symptoms *		7.97	.006	.068	.80
Social Problems		.58	.449	.005	.12
Thought Problems		2.31	.13	.021	.33
Attention Problems		3.83	.053	.034	.49
Delinquent Behaviour **		15.48	.000	.124	.97
Aggressive Behaviour *		11.89	.001	.098	.93
Total Problems Behaviour *		11.06	.001	.092	.91
Internalizing Behaviour *		8.70	.004	.074	.83
Externalizing Behaviour *		19.48	.000	.152	.99
Error	109				

Note. * $p < .01$, ** $p < .001$

Table 7

Frequency and Type of Recidivism by Gender

Re-Offence History	Males (n = 82)	Females (n = 48)
Number of offences M (SD)	2.07 (3.19)	1.29 (2.06)
Any Re-Offending	42 (51.2%)	19 (39.6%)
Violent Re-Offending*	27 (32.92%)	8 (16.67%)
Mean Survival Time in months, (*SE, 95% CI*)	**32.72** (2.89, 27.05-38-39)	**35.08** (3.64, 37.94- 42.21)

Note. * $p < .05$

Table 8

Survival Analysis for No. of Months following Assessment without a Re-Offence by Gender

	Survival Time Mean (months)	Standard Error	95% Confidence Interval
Males (*N*=82)	32.72	2.89	27.05 – 38.39
Females (*N*=48)	35.08	3.64	37.94 – 42.21

Table 9

Internal Consistency (Cronbach's alpha) Estimates for Proposed Composite Variables

Proposed Composite Variable	Individual Variable	Coefficient Alpha
Substance Abuse Problems	Total Problem Severity (PESQ)	.76 *
	Substance Abuse Interferes with functioning (YLS-CMI)	
	Substance Abuse Difficulties (SAVRY)	
Self-Harm/Suicide Attempts	Suicide Attempts (YLS-CMI)	.65
	History of Self-Harm or Suicide Attempts (SAVRY)	
Exposure to Family Violence	History of Family Violence (separate)	.76 *
	Exposure to Family Violence within the home (SAVRY)	
Delinquent Peers	Some delinquent acquaintances (YLS-CMI)	.61
	Some delinquent friends (YLS-CMI)	
	Peer delinquency (SAVRY)	
Family Relationship Problems	Father-Child Relationship (YLS-CMI)	.45
	Mother-Child Relationship (YLS-CMI)	

Note. * Indicates coefficient is within an acceptable range for internal consistency

Table 10

Bivariate Correlations of Variables within the Individual Domain

	Sexual Abuse		Emotional Abuse		Neglect		CBCL Total		CBCL Int		CBCL Ext		Suicide Attempts		Substance Abuse Problems	
	n	*r*	*n*	*r*	*n*	*r*	*n*	*r*	*n*	*r*	*n*	*r*	*n*	*r*	*n*	*r*
Physical Abuse	107	.28	109	.70	98	.43	83	.18	83	.15	83	.16	98	.29	77	.28
Sexual Abuse			106	.22	95	.07	80	.29	80	.27	80	.27	95	.14	75	-.08
Emotional Abuse					95	.39	80	.30	80	.21	80	.32	95	.25	74	.21
Neglect							78	.19	78	.07	78	.23	113	.27	85	.28
CBCL Total									92	.88	92	.91	78	.24	64	.14
CBCL Int											92	.66	78	.17	64	.03
CBCL Ext													78	.18	64	.24
Suicide Attempts															85	.26

Table 11

Bivariate Correlations of Variables within the Family Domain

	Poor Father Child Relationship		Poor Mother Child Relationship		Inadequate Supervision		Inappropriate Discipline		Poor Parental Management		Family Violence	
	n	*r*	*n*	*r*	*n*	*r*	*n*	*r*	*n*	*r*	*n*	*r*
Poor Father Child Relationship			114	.29	114	.20	114	.20	111	.25	98	.31
Poor Mother Child Relationship					114	.21	114	.22	111	.21	98	.19
Inadequate Supervision							114	.35	111	.12	98	.26
Inappropriate Discipline									111	.30	98	.34
Poor Parental Management											113	.45

Table 12

Bivariate Correlations of Parent-Child Relationship Variables and Peer Variables

	Some Delinquent Friends		Strong Attachment and Bonds (Reverse-Scored)	
	n	*r*	*n*	*r*
Poor Father Child Relationship	114	.46	111	.01
Poor Mother Child Relationship			111	.07

Table 13

Univariate Cox Regression of Single Variables for Males

Variable		*SE*	*Wald*	*df*	*p-value*	*Exp(B)*	95% Confidence Interval	
							Lower	Upper
Sexual Abuse	.52	.41	1.64	1	.20	1.68	.76	3.71
Physical Abuse *	.75	.23	10.91		.001	2.12	1.36	3.31
Emotional Abuse *	.58	.18	9.72		.002	1.78	1.24	2.55
Neglect *	.92	.39	5.52		.019	2.51	1.16	5.40
Internalizing Problems	.04	.02	5.31		.021	1.04	1.01	1.08
Externalizing Problems	.09	.02	16.83		.000	1.09	1.05	1.14
Total Problems	.06	.02	10.74		.001	1.06	1.03	1.11
Substance Abuse Problems *	.20	.08	6.80		.009	1.22	1.05	1.42
Suicide Attempts *	.83	.41	4.13		.042	2.28	1.03	5.06
Poor Father-Child Relationship	.47	.34	1.93		.17	1.60	.82	3.11
Poor Mother-Child Relationship *	1.42	.36	15.74		.000	4.14	2.05	8.34
Inadequate Supervision	.20	.39	.27		.61	1.22	.57	2.61
Inappropriate Discipline	.21	.48	.20		.66	1.24	.48	3.20
Poor Parental Management *	.63	.22	8.40		.004	1.88	1.23	2.89
Exposure to Family Violence *	.24	.10	6.20		.013	1.27	1.05	1.53
Some Delinquent Friends	.60	.37	2.66		.10	1.81	.89	3.71
Some Delinquent Acquaintances	.50	.34	2.17		.14	1.65	.85	3.23

Variable	*B*	*SE*	*Wald*	*df*	*p-value*	*Exp(B)*	95% Confidence Interval	
							Lower	Upper
Strong Attachments and Bonds *	-.63	.32	3.92	1	.048	.53	.28	.99
Age at Initial Offence	-.01	.01	.85		.36	.99	.97	1.01
Committed Sexual Offence	.05	.56	.01		.94	1.05	.35	3.11
Committed Person Offence	.59	.41	2.13		.15	1.81	.82	3.99
Committed Property Offence	.65	.39	2.78		.09	1.92	.89	4.13
Committed Other Offence	.62	.34	3.27	1	.07	1.85	.95	3.61

Note. * variables selected to be entered into the multivariate cox regression of single correlates (9)

Table 14

Univariate Cox Regression of Single Variables for Females

Variable	*B*	*SE*	*Wald*	*df*	*p-value*	*Exp(B)*	95% Confidence Interval	
							Lower	Upper
Sexual Abuse	-.22	.55	.16	1	.69	.80	.27	2.35
Physical Abuse	.32	.29	1.25		.26	1.38	.79	2.40
Emotional Abuse	.11	.33	.12		.73	1.12	.59	2.11
Neglect	1.03	.55	3.51		.06	2.80	.95	8.22
Internalizing Problems *	-.067	.03	4.66		.03	.94	.88	.99
Externalizing Problems	-.04	.04	.87		.35	.96	.89	1.04
Total Problems	-.07	.04	3.43		.06	.93	.86	1.00
Substance Abuse Problems	.15	.13	1.21		.27	1.16	.89	1.50
Suicide Attempts	.02	.58	.00		.98	1.02	.33	3.14
Poor Father-Child Relationship	.43	.53	.63		.43	1.53	.54	4.36
Poor Mother-Child Relationship	.91	.50	3.35		.07	2.50	.94	6.64

Variable	*B*	*SE*	*Wald*	*df*	*p-value*	*Exp(B)*	95% Confidence Interval	
							Lower	Upper
Inadequate Supervision	.25	.50	.26		.61	1.29	.49	3.40
Inappropriate Discipline	.46	.54	.74		.39	1.59	.55	4.56
Poor Parental Management	-.05	.32	.02		.88	.95	.51	1.77
Exposure to Family Violence	.09	.15	.36		.55	1.09	.82	1.46
Some Delinquent Friends	-.95	.52	3.39		.065	.39	.14	1.06
Some Delinquent Acquaintances	-.13	.49	.07		.79	.88	.33	2.31
Strong Attachments and Bonds	-1.03	.57	3.30		.07	.36	.12	1.09
Age at Initial Offence	-.03	.02	2.46		.12	.98	.94	1.01
Committed Sexual Offence	-11.66	896.45	.000		.99	.000	.00	
Committed Person Offence	.39	.62	.40		.53	1.48	.44	5.02
Committed Property Offence	.53	.59	.81		.37	1.69	.54	5.32
Committed Other Offence	-.07	.58	.01		.91	.94	.30	2.89

Note. * variable selected to be entered into the multivariate cox regression of single correlates according to OR and CI (1)

Table 15

Parsimonious Model for Multivariate Cox Regression of Survival Time for Males (Forward Stepwise Likelihood Ratio)

Variable	*B*	*SE*	*Wald*	*df*	*p-value*	*Exp(B)*	95% Confidence Interval	
							Lower	Upper
Poor Mother Child Relationship	1.23	.49	6.43	1	.011	3.43	1.32	8.87
Substance Abuse Problems	.29	1.00	8.73		.003	1.33	1.10	1.61
Poor Parental Management	.80	.36	4.98		.026	2.23	1.10	4.51

Table 16

Organization of Domains, Constructs and Specific Correlates

Domain	Construct	Specific Correlate (Items)	Information Source
Individual	Maltreatment	Sexual Abuse	Assessment
		Physical Abuse	Assessment
		Emotional Abuse	Assessment
		History of Neglect	YLS-CMI
	Mental Health	Internalizing	CBCL
		Externalizing	CBCL
		Total Problems	CBCL
	Substance Abuse	Problem Severity	PESQ
	Problems *	Substance Abuse Interferes with Functioning	YLS-CMI
		Substance Abuse Difficulties	SAVRY
	Suicide Attempts	Suicide Attempts	YLS-CMI
Family	Parental-Child	Father-child relationship	YLS-CMI
	Relationship	Mother-child relationship	YLS-CMI
	Household Structural	Inadequate Supervision	YLS-CMI
	Problems	Inappropriate Discipline Poor Parental Management	YLS-CMI SAVRY
	Family Violence *	History of Family Violence	Assessment
		Exposure to Violence within the Home	SAVRY

Domain	Construct	Specific Correlate (Items)	Information Source
Peers/	Delinquent Peer	Some Delinquent Friends	YLS-CMI
Interpersonal	Association	Some Delinquent Acquaintances	YLS-CMI
Relations	Strong Attachments	Strong Attachments and Bonds	SAVRY
	and Bonds		
Criminal	Age at Initial	Age at Present Offence	Assessment
	Offence		
	Types of Initial	Sexual	Assessment
	Offence	Person	Assessment
		Property	Assessment
		Other	Assessment
	Types of Re-	Serious	Assessment
	Offence	Violent	Assessment

Note. * composite constructs (duplicate information with acceptable reliability properties has been standardized and combined into a composite)

Table 17

Univariate Cox Regression of Domains for Males

Domain	*-2 Log* Initial	*-2 Log* After Domain Entered	'	*SE*	*Wald*	*df*	*p-value*	*Exp(B)*	95% Confidence Interval	
									Lower	Upper
Individual	116.25	104.90	.18	.05	11.85	'	.001	1.20	1.08	1.33
Family	226.38	214.87	.19	.05	12.27		.000	1.21	1.09	1.34
Peer	266.34	265.72	-.30	.15	4.03	'	.045	.74	.56	.99

Table 18

Univariate Cox Regression of Domains for Females

Domain	*-2 Log* Initial	*-2 Log* After Domain Entered	***B***	*SE*	*Wald*	*df*	*p-value*	*Exp(B)*	95% Confidence Interval	
									Lower	Upper
Individual	30.33	30.01	.50	.09	.33	1	.566	1.05	.89	1.24
Family	95.09	93.88	.08	.07	1.23		.268	1.08	.942	1.24
Peer	103.77	99.48	-.30	.15	4.03	1	.045	.74	.56	.99

Figure 1. Survival Rates for General Re-Offences by Gender

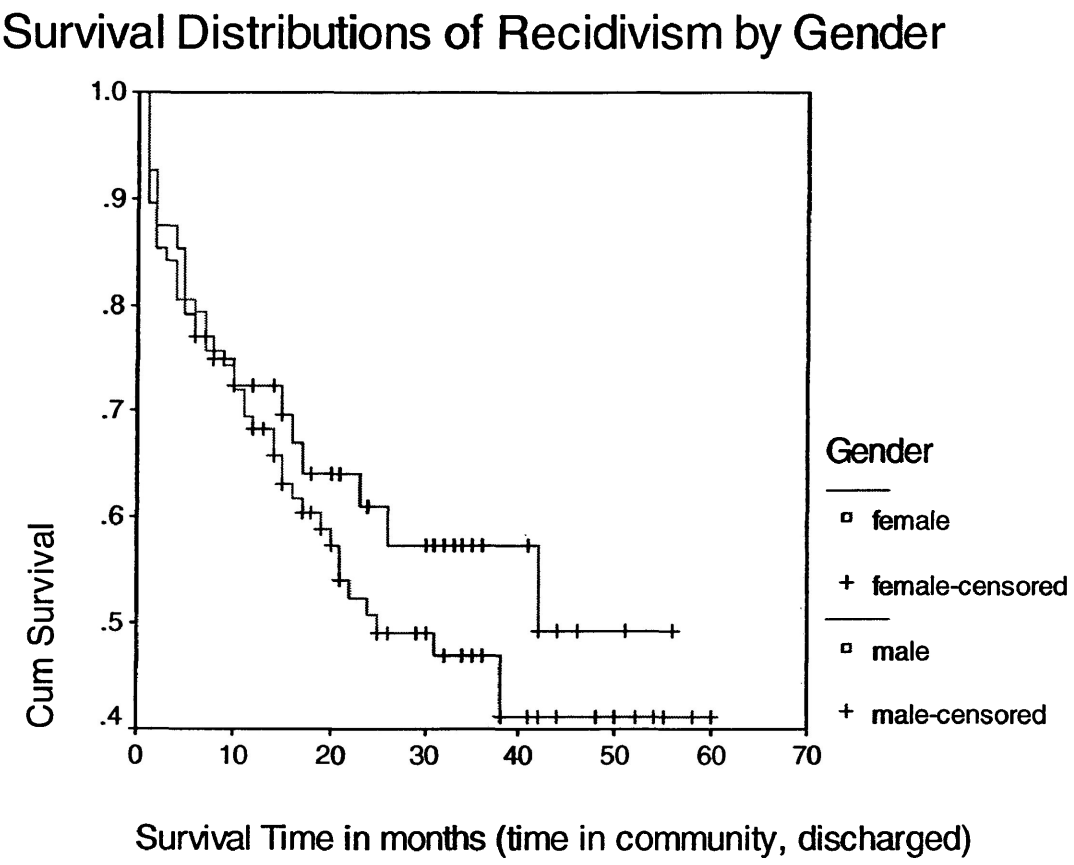
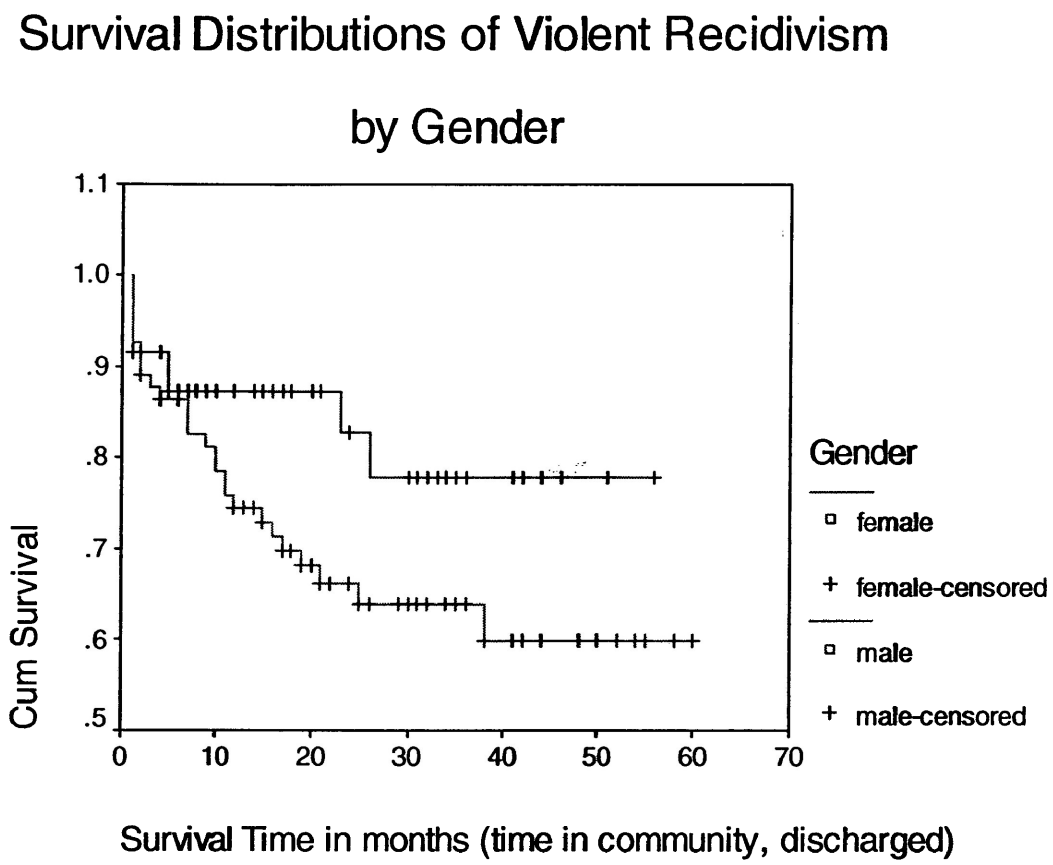


Figure 2. Survival Rates for Violent Re-Offences by Gender



Study I.D. #: _____

DEMOGRAPHIC FACE SHEET

NAME: _____ DATE OF BIRTH: _____

OFFENSE Date: _____ COURT DATE: _____

GENDER: Male _____ Female _____

JUDGE: Kunnas ___
Glowacki ___
probation ordered ___
other ___

RESIDENCE: Thunder Bay _____
Other _____ Where: _____

MOTHER'S EDUCATION LEVEL: _____ FATHER'S EDUCATION LEVEL: _____

FAMILY INCOME: Above poverty line _____
Below poverty line _____

SUBSIDIZED HOUSING: yes ___ no ___

LIVING ARRANGEMENTS: (at time of offense)
2 parents (biological) ___ single parent (mother) ___
foster care ___ relatives ___
2 parents (stepfamily) ___ other ___
single parent (father) ___

FAMILY SIZE: _____ (# of people at home) NUMBER OF SIBLINGS: at home not at home

NATIVE ___
NON - NATIVE ____

PRESENT OFFENSE(S): Sexual ____ Person ____
Property ____ Other ____
None ____

OFFENSES COMMITTED: Alone ____ With others ____

PREVIOUS MENTAL HEALTH INVOLVEMENT:

Individual/Family Counselling	yes	no
Residential	yes	no
C.A.S. Involvement (current)	yes	no
C.A.S. Involvement (past)	yes	no
Foster home (past)	yes	no
Other	yes	no

HISTORY OF PERSONAL ABUSE:

Parent substance abuse	0	1	2
Physical	0	1	2
Family Violence	0	1	2
Emotional	0	1	2
Sexual	yes ___	no ___	