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The Effect of Gender and Peers on the Association between Early Maturation and
Delinquent Behaviour: Testing a Moderated-Mediation Effect

A thesis submitted to
the Faculty of Graduate Studies and Research
in Partial Fulfillment of the requirements for the degree
Master of Arts
Psychology

by

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Abstract

The purpose of this study was threefold: 1) to examine whether peers (delinquent vs. non-delinquent) mediates the relationship between early maturation and delinquency and further establish if gender moderates this relationship; 2) to examine whether positive relationships with one's peers buffers the effect of early maturation on delinquency for girls and boys differentially; and 3) to explore if the nature of the relationship (i.e., same-sex, opposite-sex, romantic) to determine their relative importance in influencing delinquent behaviour. These questions were tested using a retrospective cross-sectional design, with a sample of youthful female ($n = 21$) and youthful male delinquents ($n = 31$). Overall, results indicated that neither negative relationships nor positive relationships mediated the relationship between early maturation and delinquency for males or females. Interestingly, there was evidence that females had more older opposite-sex peers and older boyfriends in comparison to their male counterparts. Implications of these findings are discussed.

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The Effect of Gender and Peers on the Association between Early Maturation and
Delinquent Behaviour: Testing a Moderated-Mediation Effect

Introduction

Historically, theories explaining the delinquent behaviour of adolescents have concentrated primarily on males (e.g., Andrews & Bonta, 2006; Glueck & Glueck, 1950; Hirshi, 1969), rationalized by the disproportionate number of boys committing crime in comparison to their female counterparts. Indeed, it has consistently been found that males are significantly more likely than girls to become involved in serious delinquent behaviour (Gorman-Smith & Loeber, 2005; Loeber & Farrington, 1998; Moffitt, Caspi, Rutter & Silva, 2001). Additionally, males typically have higher rates of conduct disorder (Cohen, Cohen, Kasen, & Velez, 1993; Costello, 1989) and physical aggression (Archer, 2004). Despite these differences, understanding female delinquency is important as the rate of serious crimes committed by female adolescents in Canada has more than doubled from 60 per 100,000 in 1986 to 132 per 100,000 in 2005, a relative increase of 120% (Kong & Aucoin, 2008). One group of prominent researchers in the field have recognized that to understand crime committed by girls, it is necessary to take a more in depth look at the types of relationships that they form in adolescence, particularly around the time of pubertal development (Moffitt et al., 2001). Consequently, the present study will address this very issue.

To begin the need principle will be reviewed to set the context of the present study followed by the corresponding empirical support of this principle for both girls and boys. A brief description of the key theories relevant to this proposal will then be

summarized. Lastly, an explanation of the overarching model for the study will be provided followed by an overview of the variables in this model including biological (i.e., early maturation), relational (i.e., peers and family), and psychological (i.e., criminal attitudes) factors.

Juvenile Delinquency Risk Factors

The general personality and social learning model of criminal behaviour is premised on the idea that criminal behaviour is learned and that a variety of factors influence the likelihood that one will become involved in delinquency (Andrews & Bonta, 2006). The theory asserts that eight dominant risk factors influence an individual's involvement in criminal behaviour. The four most important factors often referred to as the *Big Four* include antisocial attitudes, antisocial peers, history of antisocial behaviour, and antisocial personality. In addition to these four risk factors, problems at work and/or school, family problems, substance abuse, and the ineffective use of leisure time are also associated with a higher likelihood of criminal recidivism (Andrews & Bonta, 2006). Accordingly, these eight domains form the "foundation for effective intervention by directing services to those risk factors linked to criminal behaviour" (Bonta & Andrews, 2007, p. 13). Importantly, this theory postulates that the *Central Eight* are equally relevant for females and males (i.e., gender-neutral risk factors).

Criminogenic needs are dynamic factors (i.e., they are amenable to change) that are empirically established predictors of delinquency. Seven of the *Central Eight*—antisocial attitudes, antisocial associates, antisocial personality, problems at work

and/or school, family problems, substance abuse, and the ineffective use of leisure time are considered dynamic factors that serve to reduce rates of criminal re-offending if targeted using appropriate treatment (Bonta & Andrews, 2007).

Using meta-analytic techniques, Gendreau, Little, and Goggin (1996) examined 131 studies including 1141 correlations with adult re-offending. They found that criminal history, one of the most robust *static* (i.e., unchanging) risk factors for crime, and criminogenic needs including many of the *Central Eight* predicted recidivism equally. However, as the authors recognize, there were very few studies using female offender samples included in these results.

More recently, Cottle, Lee, and Heilbrun (2001) conducted a meta-analysis to identify predictors of recidivism among juvenile offenders. Effect sizes were calculated for 30 predictors of recidivism. Of the 23 significant mean effects, many of the *Central Eight* were found to be strong predictors of adolescent delinquency (males and females combined) including family problems ($Z_r = .23$), ineffective use of leisure time ($Z_r = .23$), delinquent peers ($Z_r = .20$), and a number of criminal history variables including age at first contact with the law ($Z_r = -.34$), age at first commitment ($Z_r = .20$), number of prior arrests ($Z_r = .06$), length of first incarceration ($Z_r = .19$), and number of prior commitments ($Z_r = .20$). Interestingly, the researchers did not disaggregate the results by gender but instead included gender as a predictor variable. Indeed, being male ($Z_r = .11$) was positively related to recidivism.

Overall, there is an abundance of evidence using predominantly male samples to support the relationship between the *Central Eight* risk factors and delinquency.

However, research examining these risk factors for female offending using exclusively female samples is meagre in comparison. To date, there are three meta-analyses examining the correlates and/or predictors of female delinquency (Green & Campbell, 2006; Hubbard & Pratt, 2002; Simourd & Andrews, 1994).

Simourd and Andrews (1994) included 34 effect sizes in their meta-analyses to identify correlates of juvenile delinquency and to examine if there are correlates more salient for females compared to males. They examined six specific domains including social class, educational/vocational achievement, parental/family factors, temperament, and antisocial attitudes and/or peers. It was found that the variable most highly correlated with offending was antisocial peers/attitudes for both females (average $r = .39$) and males (average $r = .40$). It is important to note that this variable was aggregated to include both antisocial attitudes and peers therefore the independent effects of antisocial peers could not be determined. This meta-analysis also included cross-sectional and longitudinal designs thereby limiting our ability to differentiate between correlates and predictors.

Hubbard and Pratt (2002) included 97 effect size estimates in their meta-analysis examining predictors and/or correlates of recidivism for female delinquents. Importantly, they found the *Big Four* identified in the male centered literature were all strong correlates of delinquency for youthful female offenders (Hubbard & Pratt, 2002). Specifically, it was found that a history of antisocial behaviour ($Z_r = .48$), antisocial peers ($Z_r = .53$), antisocial attitudes ($Z_r = .18$), and antisocial personality ($Z_r = .21$) were all significantly related to female delinquency. It should be noted that the number of

effect sizes contributing to the mean effect were quite small. Specifically, antisocial attitudes had three effect sizes and antisocial peers had two effect sizes contributing to the mean effect of their respective predictor variables. This suggests that what we know in terms of the relative importance of antisocial attitudes and associates for girls is still in its infancy when compared to the male-based research.

Green and Campbell (2006) updated the Simourd and Andrews (1994) meta-analysis and examined the predictive strength of several risk/need domains including both gender-neutral variables (e.g., antisocial attitudes) and hypothesized gender-specific variables (e.g., childhood maltreatment). Additionally, they disaggregated antisocial peers and criminal attitudes to examine their independent effects on delinquency. Overall they found that the risk predictors for females and males were mostly gender similar including antisocial attitudes, social functioning (i.e., peers), and prior antisocial behaviour. Specifically, the confidence intervals across risk predictors overlapped 84% of the time for studies examining recidivism. Despite these similarities, there was some evidence that child maltreatment was a more important risk factor for female offenders ($CI = .11$ to $.33$) than it was for males ($CI = .01$ to $.15$). This suggests that although males and females may have many similar correlates of delinquency, there may be gender-specific factors— perhaps in the quality (i.e., abusive vs. loving) of the relationships they hold— that are more important for girls than boys.

Despite the abundance of studies demonstrating the importance of the *Central Eight* in predicting delinquency, as previously mentioned, the amount of evidence in support of this relationship is more abundant for boys than for girls. Furthermore,

although meta-analyses are useful in drawing more substantial conclusions regarding the applicability of a particular risk factor, one limitation of these studies is the inability to account for the various ways in which a particular construct is measured (i.e., Which measure of attitudes was utilized? Were peers and attitudes collapsed into one variable?). Lastly, although the aforementioned meta-analyses indicate that peers are important predictors of recidivism for both boys and girls, they do not tell us how these effects are moderated (i.e., either increased or decreased) by other factors such as early maturation. This underlines the need for more studies examining the multitude of factors that may interact to influence female juvenile delinquency.

Theoretical Foundation

Early Maturation

Moffitt's adolescent limited theory of delinquency. Moffitt's (1993) typology suggests that there are two distinct types of adolescent offenders. The first group consists of those who fall into the life-course-persistent (LCP) category who begin exhibiting antisocial behaviour in childhood. Moffitt (1993) attributes LCP behaviour to early cognitive deficits that interact with a dysfunctional family or school environment and consequently place the individual at greater risk for developing an enduring personality characterized by antisocial behaviour. In contrast, adolescent limited offenders (ALO) typically do not begin exhibiting antisocial behaviour until adolescence. ALO delinquency is attributed to the delay between physical maturation in adolescence and the privileges one attains in adulthood. Central to this study, Moffitt's (1993) adolescent limited theory of delinquency suggests that early pubertal maturation

is critical to understanding why female adolescents participate in delinquent behaviours.

From a developmental perspective, the biological changes that take place during puberty represent a key milestone in adolescence. Early maturing adolescents realize that they are physically mature enough to engage in adult-like behaviours, but are not allowed to engage in such acts due to their biological age (Moffitt, 1993). Adolescents often attempt to reconcile the differences between their biological and social maturity, in effect trying to bridge the 'maturity gap', which may lead to acts of delinquency (Caspi, Lynam, Moffitt & Silva, 1993; Moffitt, 1993). Additionally, as a result of early maturation, adolescents are more likely to form friendships with individuals who are similarly developed, resulting in peers that may be older and more socially mature than their same-age peers.

For girls, a number of factors may help to explain why they may be more detrimentally affected by early maturation compared to boys. As Stattin and Magnusson (1990) have suggested, it could be that early maturing girls tend to associate with deviant males outside the school system. As a result of appearing physically mature, older boys find them sexually attractive and subsequently pursue their friendship. Alternatively, physically developed girls may actively seek out peers who are similarly-developed resulting in the acquisition of an older peer network. Although it can be argued that both early maturing males and females are likely to form friendships with older peers, research has shown that negative *boyfriends* are worse for women than are negative *girlfriends* for men (e.g., Benda, 2005). This suggests that the

types of relationships one forms in adolescence are central to understanding the link between early maturation and delinquency.

Peers

As a youth progresses through adolescence, he/she gains the freedom to interact with whomever he/she pleases, including delinquent peers. As Agnew (2003) points out, this transition period of adolescence typically entails a reduction of supervision (both parental and school-related), increased social and academic demands, and participation in more peer-orientated activities. A number of theories have incorporated the influence of peers in explanations of adolescent delinquency.

Sutherland's differential association theory. One of the most common theories used to explain peer influence is Sutherland's (1947) differential association theory. This theory supports the idea that one acquires the values, attitudes, and motives for antisocial behaviour through the frequency, duration, and intensity of one's interactions with antisocial others, particularly in intimate social settings. Specifically, differential association theory posits that juveniles engage in criminal behaviour after acquiring attitudes favourable to law violations. A premise of this theory is that youth who have antisocial peers are more likely to become antisocial themselves. These theoretical explanations have been widely used to explain the influence of peers on adolescent criminal behaviour (e.g., Agnew, 1991; Haynie, 2002; Warr, 1993, 2002, Warr & Stafford, 1991). Noteworthy, differential association theory is said to be applicable to all adolescents, regardless of gender (i.e., gender-neutral). However, the

majority of research on peer influence premised on differential association theory has used predominantly male samples.

Relational cultural theory. Relational cultural theory (RCT) is a gender responsive model that provides a useful framework for understanding gender differences in relational patterns (Miller, 1986a). The theory was developed in response to male dominated theories of development that emphasize independence and autonomy as *normal*. Informed by the work of Jean Baker Miller (1986b, 1988), RCT places a woman-focused lens on these developmental theories and argues that it is the healthy and meaningful connections formed with others that are part of *normal* development for women. The framework is premised on five core aspects that must be satisfied to achieve significant and fulfilling relationships with others including mutual engagement, authenticity, empowerment/zest, the ability to deal with conflict, and desire for further connection (Miller, 1986a).

Mutual engagement refers to the perceived involvement by both parties in the relationship, and both commitment and sensitivity to the relationship. Authenticity refers to the freedom to be genuine in the relationship and to get to know both oneself and the other in the relationship. The sense of personal strength that stems from the relationship, and the drive to take action, is the result of empowerment. The ability to deal with conflict refers to the ability to express, receive and process diversity in the relationship. Lastly, as a result of a fulfilling relationship with one individual stems the desire for further connection with others (Miller, 1986a).

One result of not having these facets met within one's relationships is the feeling of isolation, which can ultimately lead to psychological distress (Walker, 2004 as cited in Frey, Beesley, & Miller, 2006). In essence, relationships in which these facets are absent can result in feelings of despair, shame, self-blame, and guilt, which, in turn, could result in drug abusing or otherwise antisocial behaviours (Miller, 1988).

Based upon this theory, it is argued that when a relationship begins to dissolve, the wronged individual is no longer able to represent herself or her feelings in the relationship (Jordan & Hartling, 2002). Consequently, to maintain the relationship, she will begin to keep aspects of herself out of relationship (Miller & Striver, 1997). In other words, when an individual begins to feel as though the relationship is falling apart, they will use a variety of strategies to fit into the relationships available resulting in a less authentic or genuine relationship (Miller, 1988). As a possible explanation for deviancy, one survival mechanism could involve conforming to the attitudes and beliefs held by one's peers as a method of maintaining an otherwise unhealthy relationship.

Overall, this theory highlights the importance of relationships for females. Whereas most psychological theories tend to focus on individuation (e.g., attachment theory), this theory conceptualizes connections with others as critical to the healthy development of women (Jordan, 1997, as cited in Liang, Tracy, Taylor, Williams, Jordan et al., 2002). Consequently, it is theorized that disruptions or conflict in relationships will affect females to a greater degree than males who are more likely to be interested in pursuing autonomy rather than forming meaningful relationships with others.

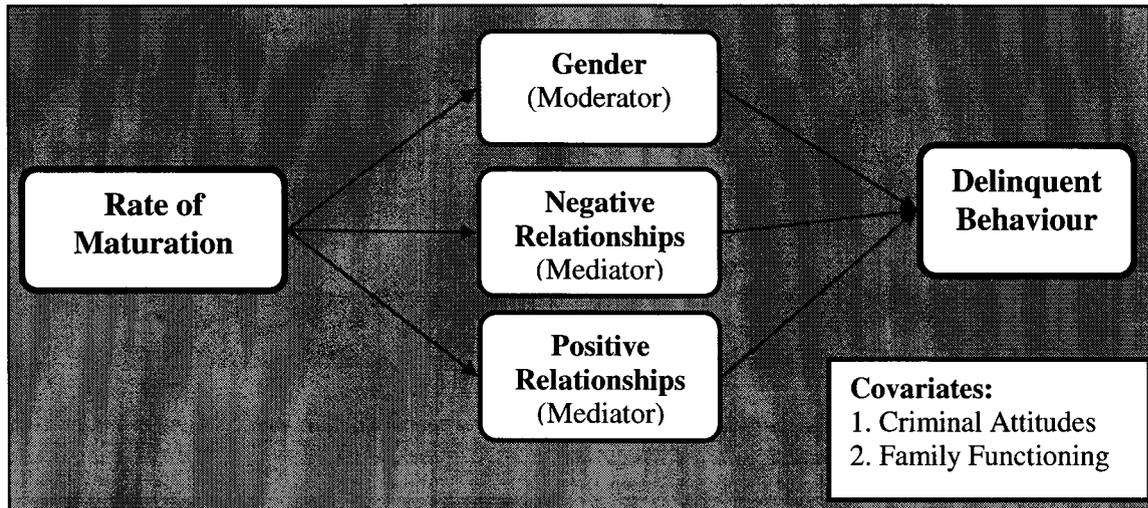
Although RCT addresses the need for a gender-informed theory of development for girls, there has been little research examining its practicality on criminal justice samples. As feminist scholars have argued for the creation of programs grounded in gender informed theories such as RCT (e.g., Bloom, Owen, & Covington, 2003), it is essential that this theory be empirically supported first.

Theoretical Framework

Drawing upon Sutherland's differential association theory, RCT, and the work of Moffitt and her colleagues, the purpose of the planned study is threefold: 1) to examine the moderated-mediating effect of gender and peers on the relationship between early maturation and delinquency; 2) to examine whether or not positive relationships with one's peers buffers the effect of early maturation on delinquency for girls and boys differentially; and 3) to further examine the nature of the relationship (i.e., same-sex, opposite-sex, romantic) to determine their relative importance in influencing delinquent behaviour.

Two moderated-mediation models will guide the proposed research. The first model will examine the relationship between early maturation (IV), gender (moderator), *negative relationships* (mediator), and delinquency (DV). The second model will examine the relationship between early maturation (IV), gender (moderator), *positive relationships* (mediator) and delinquency (DV). The overarching (and simplified) model to be tested is presented in Figure 1. It is hoped an examination of these relationships will provide a better understanding of the role that positive and negative relationships play in early maturing adolescents delinquent behaviour.

Figure 1

Guiding model

It is important at this point to distinguish between a mediating and a moderating variable as the terms are often used misused. A moderating variable is a variable that changes the strength or direction of the relationship between a predictor variable and the dependent variable (Frazier, Tix, & Barron, 2004). In other words, a moderator is simply an interaction in that the effect of one variable depends upon the level of another (Frazier, Tix, & Barron, 2004). In contrast, a mediator is a variable that explains the relationship between a predictor variable and the dependent variable (Baron & Kenny, 1986). Moderators are often used when there is an inconsistent relationship found between the predictor variable and the outcome of interest. In contrast, mediators are used if there is substantial empirical support for the relationship between a predictor

and a particular outcome and the researcher is more interested in explaining and understanding this relationship (Frazier et al., 2004).

Early Maturation

Support for the relationship between early pubertal development and delinquency is evident in both the developmental and criminological literature using both mixed-gender (Beaver & Wright, 2005; Felson & Haynie, 2002; Flannery, Rowe, & Gulley, 1993; Halpern, Kaestle, & Hallfors, 2007; Lynne, Graber, Nichols, Brooks-Gunn, & Botvin, 2007; Negri, Fung & Trickett, 2008; Williams & Dunlop, 1999) and single-gender samples (Caspi et al, 1993; Caspi & Moffitt, 1991; Haynie, 2003; Stattin & Magnusson, 1990; Williams & Dunlop, 1999). However, early maturation is more commonly used in an effort to understand female delinquency. Haynie (2003) argues that pubertal development is largely useful for explaining girls' delinquency for two reasons. Foremost, the physical changes in a girl's body are highly visible in comparison to boys' development. As a female adolescent transcends through puberty she may give the impression to others (i.e., parents and peers) that she is ready to take on adult responsibilities and roles and is therefore treated accordingly. Consequently, having gained the autonomy from their parents and more freedom to interact in different social settings, physically developed girls have more opportunities to participate in delinquent acts (Haynie, 2003). In essence, both biological factors (i.e., rate of maturation) and social factors (i.e., peers and family) help to explain why early maturing girls are more likely to have higher levels of delinquency.

Although more commonly used to explain female delinquency, support for the relationship between early maturation and delinquency is evident for both boys and girls. Williams and Dunlop (1999) examined the relationship between relative pubertal status, perceived pubertal timing (compared to one's classmates) and self-report delinquency on a sample of 99 school boys (aged 13 to 15) using a cross-sectional design. Their results showed that off-time maturers (i.e., those early or late) reported a wider range of delinquent acts ($t = 1.85, df = 97, p < .03$), crime ($t = 2.25, df = 97, p < .01$), and school opposition behaviours ($t = 2.15, df = 97, p < .01$) than did those who matured on time.

More recently, Negriff and her colleagues (2008) conducted a cross-sectional study to examine the effects of pubertal development on delinquency for both boys ($n = 241$) and girls ($n = 213$), aged 9 to 13. All of the participants were active cases in the Children and Family Services (as a result of neglect, physical abuse, or sexual abuse) of a large west coast city in the United States. Using Structural Equation Modeling (SEM) they found that early pubertal timing (timing of puberty relative to one's peers; $\beta = .13, p < .01$) and pubertal stage (the individual's level of pubertal development at a certain point in time; $\beta = .21, p < .01$) were both related to higher delinquency. Gender was examined as a moderating variable but was found to be non-significant. This suggests that early maturation equally affects both boys and girls.

Although it is apparent that both girls and boys are detrimentally effected by early entry into puberty, it has been suggested that girls are more adversely affected than boys (Celio, Karnik, & Steiner, 2006; Zahn, 2007). One reason for this could be

that early physically maturing girls tend to develop negative feelings towards their bodies because they are unable to understand that these bodily changes are part of a transitional period common to all adolescents (Celio et al., 2006). Consequently, they have not yet learned how to deal with the ensuing expectations of others, particularly boys.

Indeed, there is some evidence using mixed gender samples to suggest that puberty plays a larger role in female delinquency than it does males (Flannery et al., 1993; Moffitt et al., 2001). Flannery and his colleagues (1993) examined the influence of pubertal status and chronological age on the delinquent behavior of adolescents. Their study used a sample of 376 males and 397 females (aged 10 to 16) derived from surveys conducted within people's homes in the community (i.e., families located in a Southwestern city in the United States). Overall, it was found that both early-maturing boys and girls reported higher levels of delinquency than their on-time or late-maturing peers. Specifically, using regression analyses both pubertal status (i.e., adolescent's perceptions of their own level of pubertal maturation) and timing of physical maturation (i.e., early, delayed, on-time) accounted for a significant amount of variability in both girls' and boys' delinquency. Interestingly, although age was not a significant predictor for female delinquency, age was a better predictor for boys than was pubertal status. Overall, they conclude that their data were more useful in explaining the effects of early maturation on female delinquency than male delinquency.

Moffitt et al. (2001) used a sub-sample ($n = 1000$) from the Dunedin Longitudinal study in New Zealand to examine gender differences in conduct disorder from childhood to adulthood. They found that although males typically had higher levels of delinquency than females across adolescence, this gap narrowed around the age of 15. In other words, boys and girls are most similar in their participation in delinquent acts around the age of 15. Moffitt and her colleagues conclude that this age corresponds to the most visible physical changes in female adolescents, and consequently forms what they call a *peri-pubertal peak* in female offending. Although there was no measure of pubertal timing for boys in the Dunedin study, boys' antisocial behaviour appeared relatively stable from age 10 to 18 suggesting that puberty may not be as important for explaining boys' delinquency compared to girls (Moffitt et al., 2001).

Contrary to the aforementioned studies that have found either no gender differences or differences in favour of girls, at least one study has found early maturation a better predictor of delinquency for boys. Using data from the National study of Adolescent Health (Add Health), Beaver and Wright (2005) conducted a longitudinal study examining the influence of pubertal development on the misconduct of male ($n = 2474$) and female ($n = 2680$) adolescents grade 7 through 12. Although pubertal development was positively and significantly related to delinquency for both girls ($\beta = .05$) and boys ($\beta = .11$), the relationship was significantly stronger for boys (note that confidence intervals were not provided).

Overall, studies that have examined the effects of early maturation on delinquency have produced wide-ranging results. This is likely the product of studies that have used a wide range of samples (i.e., schools, communities, national databases, youthful offenders), a multitude of methods (e.g., cross-sectional, longitudinal) and a multitude of measures (e.g., age of menarche, Tanner's pubertal stages) to examine the link between early maturation and delinquency. Furthermore, cohort effects must be taken into account when interpreting these mixed results. For example, the prevalence of obesity has increased in children and adolescents over the last few decades, particularly in industrialized countries, and research has shown that overweight children tend to mature earlier than normal-weight children (Shalitin & Phillip, 2003). Despite these issues, what may help to make sense of these mixed results is a greater understanding of the potential mediating or moderating variables that are interconnected to the relationship between early maturation and delinquency. It may be that maturing early is only a risk factor for those youth that acquire delinquent peers, and those that maintain pro-social peer relationships are less likely to develop antisocial tendencies. Specifically, early maturation may be a risk factor for later delinquency through the mediating role of deviant peers (Fergusson et al, 2007; Haynie, 2003).

Negative Peer Relationships

Moffitt (1993) proposes that peers, particularly male deviant peers, mediate the relationship between the onset of puberty and conduct problems. In line with this suggestion, Stattin and Magnusson (1990) found that early puberty among girls interacts with associations with older males to increase delinquency. Specifically, they

found that girls who had matured earlier than their peers, and consequentially had non-conventional peers (i.e., older peers, working peers, and stable boyfriend relations), were more likely to be involved in norm violating behaviour (e.g., getting drunk, stealing goods, etc.). However, for early maturing girls who did not have any non-conventional peers, no significant differences were found between early maturing and late maturing girls in their rule breaking behaviour.

Lynne and her colleagues (2007) found further support for the fact that peers mediate the relationship between early maturation and delinquent behaviour. Specifically, using a longitudinal design they collected data at the 6th, 7th, and 8th grade on 1366 African American and Latino youth. Overall, their results showed that pubertal timing was significantly associated with friend delinquency in the 6th grade but not in the 7th or 8th grades. Specifically, early maturers reporting more peer delinquency than on-time/late maturers in the 6th grade only. Given this finding, they used 6th grade friend delinquency as the mediating variable and found that 6th grade friend delinquency mediated the relationship between early maturation and delinquency in the 6th, 7th and 8th grade for both boys and girls.

Haynie (2003) used data from the National Longitudinal Study of Adolescent Health and investigated whether more developed girls are in friendship networks that are more conducive to delinquency than the networks of less developed girls. Additionally, they examined three types of delinquent behaviour including party deviance (e.g., drinking, smoking, school truancy), minor delinquency (e.g., painting graffiti, shoplifting, vandalism), and serious delinquency (e.g., violent offences,

burglary, robbery, selling drugs). Overall, they found that trust and autonomy from parents, conflict with parents, exposure to peer deviance, and being involved in a romantic relationships (yes/no variable) mediated the puberty-delinquency association. However, the importance of each of these mechanisms depends on the context of delinquency (i.e., party deviance, minor delinquency, and serious delinquency) and the indicators of pubertal development that are used. Specifically, the pubertal-delinquency link was best explained by these variables when the type of delinquency being examined was party deviance (e.g., drinking alcohol, smoking cigarettes) and a measure of relative (to one's classmates) pubertal development was used. Based upon these findings, Haynie (2003) suggests that early-matured girls may not be making *more* male friends or *older* friends as suggested by some researchers (e.g., Stattin & Magnusson, 1990). Instead, they are more likely to be involved in a romantic relationship or have a large number of friends participating in minor delinquent acts. Although not looking specifically at the deviance of their romantic partner, these findings suggest that the type (i.e., romantic partner vs. opposite sex peer) rather than the number of delinquent peers that may be more useful in explaining the relationship between early maturation and delinquency.

Overall, these findings allude to the fact that peers, particularly male peers, may act as a mediator in the relationship between early maturation and delinquency for girls. However, as early maturation is more commonly studied in an effort to understand female delinquency, whether this link is purely a female phenomenon has yet to be determined. Although there is some evidence to suggest that the relationship between

early puberty and delinquency does not differ by gender (e.g., Lynne et al., 2007; Negriff, Fung, & Trickett, 2008), the lack of male comparison groups, differential methodologies used to make gender comparisons, and the variety of samples utilized makes this conclusion tenuous.

Delinquent peers. The influence of deviant peers has been established to be a central risk factor for adolescents (Andrews & Bonta, 2006; Cottle et al., 2001; Green & Campbell, 2006; Hubbard & Pratt, 2002; Simourd & Andrews, 1994). Relative to boys, however, there are few predictive studies examining the influence of peers for female delinquency. Nonetheless, the overall consensus is that adolescents who report having delinquent friends tend to report having higher levels of delinquency than those with few or no delinquent friends.

Although the significance of peers is undisputed, there have been contradictory findings as to the relative importance of peers for females in comparison to their male counterparts, particularly when examined simultaneously in the same sample (e.g., Funk, 1999). In large part, this lack of understanding is a result of the few primary studies involving girls relative to their male counterparts. Despite this shortcoming, there is a reasonable amount of evidence to suggest that delinquent peer association is a better predictor among boys than girls (Agnew & Brezina, 1997; Erickson, Crosnoe, & Dornbusch, 2000; Galvaby, 2003; Funk, 1999; Piquero, Gover, MacDonald, & Piquero, 2005).

Galvaby (2003) conducted a qualitative study examining the influence of peers on a sample of adjudicated adolescents boys ($n = 10$) and girls ($n = 10$) in Hawaii.

Overall, they found that peers were very influential in the delinquent behaviour of boys' behaviour. However, girls were more inclined to blame their parents or themselves for their deviant behaviour, rather than their friends. This suggests that although boys may blame their peers for their deviancy, girls are less likely to cast blame on their peers. One reason for this could be that girls are more concerned with maintaining their relationships with, and being accepted by their peers as suggested by RCT (Miller, 1986a).

Piquero and her colleagues (2005) used longitudinal data from a sample of adolescents to examine the mediating role of peers in the relationship between gender and delinquency. Tobit regression analyses indicated that associating with deviant peers was predictive of delinquency for both boys and girls. However, a coefficient comparison test indicated that delinquent peers had a larger effect for males than for females ($z = 2.16, p < .05$). Interestingly, to explain their results it was suggested that male peers may be more influential for girls. However, the variable chosen to represent delinquent peers in their study was limited to peers in general.

Funk (1999) examined how risk factors differ for female and male offenders, specifically looking at the efficacy of several risk assessment instruments used to classify juvenile probationers. Using regression analyses, she examined regression models for the full sample, males only, and females only. When females and males were placed into the same model, delinquent peers were not a significant predictor for juvenile delinquency. However, when males and females were examined independently, peers added significantly to the variance accounted for in male

delinquency, but not female delinquency. This suggests that studies that used mixed gender samples may be identifying risk factors that are more salient for male offenders, and therefore incorrectly concluding that they are in fact gender-neutral.

Although these studies suggest that males are more strongly affected by their peers than are females when it came to their involvement in delinquent acts, the importance of peers for girls cannot be dismissed. As previously mentioned, Hubbard and Pratt's (2002) meta-analysis found that antisocial peers had the largest effect size for female delinquents ($Z_r = .53$) among all of the predictor variables examined. Furthermore, Gavazzi and his colleagues examined a sample of 305 court-involved youth to examine gender differences in criminogenic needs (Gavazzi, Yarcheck, & Chesney-Lind, 2006). A series of t-tests revealed that girls had significantly *more* peer relationship risks (e.g., antisocial peers) than boys.

As a result of these contradictory findings some studies have called for more basic research of both a qualitative and quantitative nature in the area of peer influence (Moffitt et al., 2001; Agnew & Brezina, 1997). A limitation of most of the aforementioned studies is that they failed to disaggregate the types of peer relationships an adolescent may have (i.e., same-sex peers, opposite-sex peers, romantic partners). There is evidence to suggest that male peers, particularly older male romantic partners, are to blame for girls' delinquency in adolescence (e.g., Halpern et al., 2007). As a result of moving into adolescence, mixed-sex peer groups start to become more common. Consequently, there is a need to examine the "gender composition" of

delinquent peer groups and to examine kinds of relationships that may have more influence on delinquency than others (Piquero et al., 2005).

Same-sex and opposite-sex peers' deviancy. There is evidence to suggest that girls are more influenced by their male companions than by their same-sex friends (Agnew & Brezina, 1997; Caspi et al., 1993; Giordano, 1978; Haynie, Steffensmeier, & Bell, 2007, Warr, 1996). Caspi et al. (1993) conducted a longitudinal analysis of female juvenile delinquents in New Zealand ($n = 1037$) to examine how biological changes in adolescence are associated with acquiring delinquent peers, and further how pubertal changes are linked to involvement in delinquent behaviour. They compared these effects in one of two settings: mixed-gender schools and all-girl schools. Their results indicated that the association between early maturation and delinquency only reached significance for those girls attending mixed-gender schools. Of those who attended all-girls schools, early maturation was not associated with delinquency. From these findings the authors suggest that there are two factors that are necessary for the initiation and maintenance of female delinquency: puberty and boys (Caspi et al., 1993).

Agnew and Brezina (1997) examined the effects of interpersonal strain (i.e., problems in peer relations) on female and male delinquency. Importantly, they included both same-sex and opposite-sex relationships. After controlling for deviant beliefs (i.e., criminal attitudes), and social control (as those with low self-control lack the social skills for effective interaction), they found that interpersonal strain is an important correlate of certain types of delinquency among both female and male adolescents.

Among females, poor peer relations was the best predictor of fighting. Although their findings indicated that peer relations in general were more important for males than females in predicting delinquency, positive relations (e.g., I make friends easily with the opposite sex) with the opposite sex was significantly associated with higher delinquency among both boys and girls. Specifically, adolescents who report positive relations with their opposite-sex peers were more rather than less delinquent. In line with RCT, Agnew and Brezina (1997) conclude that females are more likely to respond to relational problems with their male peers by making an effort to restore or maintain a harmonious relationship, even if that means self-sacrifice on their part (e.g., engage in crime to placate partner).

Giordano (1978) examined the social context in which females got involved in delinquent acts using a sample of 109 incarcerated adolescent females. She found that girls who spend time in groups with boys are more likely to engage in antisocial behaviour than girls who only associated with other girls. Similarly, using data from the National Longitudinal Study on Adolescent Health, Haynie et al. (2007) found that exposure to opposite sex peers increased the probability that a female would engage in serious violence, but served to reduce males' involvement in serious violence.

Overall, this line of research suggests that opposite sex peers may differentially affect boys and girls likelihood of engaging in delinquency. It seems safe to conclude that opposite-sex peers are an important source of influence among girls. However, many of the aforementioned studies fail to disaggregate the types of relationships girls have with these male peers into romantic and non-romantic relationships (e.g., Aseltine,

1995; Piquero et al., 2005). It is possible that boys whom which girls are romantically interested in have more influence over girls' behaviour than their non-romantic male peers.

Romantic partners' deviancy. As adolescence brings with it a heightened interest in the opposite sex (Collins, 2003), how these types of relationships influence delinquency is equally important to understand. When an adolescent gets involved in a romantic relationship, the amount of time spent with this individual increases, intimate communications become more common, and their feelings towards them become more powerful (Haynie et al., 2005). In line with differential-association theory, these facets of a relationship provide the basis for influencing an adolescent's attitudes and behaviour (Haynie et al., 2005). Similarly, as relational cultural theory suggests (Miller, 1986a), negative male influences affect women as they struggle to access traditional sources of power (e.g., social status). Consequently, they are more likely to become dependent upon their male partner and do whatever necessary to maintain their relationship which may include breaking the law.

There is some evidence to support the relationship between antisocial romantic partners and delinquency (Benda, 2005; Halpern et al., 2007; Haynie et al., 2004; Jones, 2008). Benda (2005) followed female ($n = 300$) and male ($n = 300$) graduates of a boot camp for five years to examine gender differences in predictors of recidivism. Cox proportional hazard models were run separately by gender. Results indicated that affiliation with antisocial peers was the most robust predictor of re-offending for men ($\beta = .57$). Although significant, antisocial peers was a less important predictor for

women ($\beta = .11$). However, living with a criminal partner was a better predictor of recidivism for women ($\beta = .64$) than for men ($\beta = .11$).

Haynie, Giordano, Manning and Longmore (2005) examined romantic partner influence on the delinquent behaviour of boys ($n = 1590$) and girls ($n = 1355$) using data from the National Longitudinal Study of Adolescent Health. Their findings showed that romantic partner's deviance had a stronger effect on girls involvement in minor deviance (e.g., smoking, drinking, fighting and school truancy) than it did for boys. Additionally, it was found that the longer the duration of the relationship with one's significant other, the stronger the association between romantic partner deviance and the respondent's deviance (Note: no effect sizes were provided).

Jones (2008) conducted a qualitative study to examine the relationship between female and male adult co-offenders in a United Kingdom prison. They conducted semi-structured interviews with 50 women to determine the relationship they had with their co-defendant and how they came to committing the offences together. Overall, 40% of the women indicated that they committed the crime in order to "stand by their man" (Jones, 2008, pg. 156). Importantly, they also found that the men in these dyads had either used some form of manipulation or were abusive. This suggests that both mental and physical coercion by a male co-defendant may help to explain why some females commit crime.

A recent study by Halpern et al. (2007) examined the relationship between perceived physical maturation and membership in risk cluster behaviours using a subsample of boys and girls derived from the Waves I and II of the National Longitudinal

Study of Adolescent Health ($n = 3000$). Using cluster analyses, groups were created based upon patterns of risky behaviours (e.g., cigarette smoking, marijuana use, drinking, sexual intercourse etc...). Using a series of multinomial logistic regression models (run separately for each gender), they found support for their hypothesis that advanced physical maturity predicts membership in peer groups (i.e., clusters) characterized by patterns of elevated drug use and risky sexual behavior. Additionally, having a romantic partner mediated the relationship between physical maturity and peer group membership for both boys and girls. Although the effect of an older partner could not be examined for boys, (as most had been in relationships with girls younger than themselves), it was interesting that having an older boyfriend added to the mediated effect of romantic partners for girls.

Despite these findings, there were several limitations to this study (Halpern et al., 2007). As the authors point out, physical maturity remained statistically significant after controlling for partner information (i.e., romantic partner, age of romantic partner) in girls' models suggesting only partial mediation. As the only variables controlled for included age, race, and parental education, it is possible that other important mediators between pubertal status and risk behavior are more useful in explaining this relationship. Additionally, as the researchers used a non-custodial sample, the outcome measures were composed of primarily minor delinquent acts (e.g., smoking cigarettes, drinking). An investigation of possible mediating variables between early maturation and more serious forms of delinquency within a sample of adjudicated adolescents could present very different results. Lastly, the method of mediation used by the

researchers, referred to as the *subgroup approach* whereby analyses were run separately by gender, cannot be used to indicate whether mediation differs between the subgroup (i.e., males and females) (Edwards & Lambert, 2007). Although the authors concluded that romantic partners mediate the relationship between early maturation and minor delinquency for both boys and girls, they are unable to conclude whether the effect is stronger for girls or for boys (i.e., moderated by gender). Overall, romantic partners may exert a unique influence on the offending behaviours of girls, but there is insufficient evidence to make any firm conclusions.

Positive Relationships

Peers. Based upon RCT, it is plausible that an adolescent girl who has quality relationships with their peers is less likely to become involved with antisocial peers, and consequently less likely to partake in delinquent activities. Although meagre, research examining the impact of positive relationships on delinquency has yielded contradictory findings.

Agnew and Brezina (1997) found that females who report positive relations with their peers are *more* rather than *less* delinquent. Furthermore, they found that the only peer variable significantly associated with female delinquency was positive relations with the opposite sex. Specifically, girls who received attention from or were popular with boys were more likely to be delinquent than girls without these positive relations with boys. In line with Jones' (2008) conclusion, Agnew and Brezina (1997) suggest that girls may conform to their male friends' needs, demands and activities in

order to maintain their positive relationships with them and reduce any interpersonal strain.

Conversely, a study looking at the risk and protective factors of youthful offenders found that positive peer relations was in fact a protective factor youthful offenders (Hoge, Andrews, & Leschied, 1996). Importantly, although gender was considered as an independent variable in this study, the results of peer relations was not disaggregated by gender. It is possible that positive peer relations have differentiating effects for boys and girls, as suggested by Agnew and Brezina (1997). The proposed study will attempt to clarify the role of positive peer relationships on female adolescent delinquency.

Romantic partners. Although there has been some research examining the effects of having a delinquent romantic partner (e.g., Benda, 2005; Halpern et al., 2007), there has been little done on the protective nature of romantic partners, at least for girls. For boys, there is some research that has found that stable romantic relationships can actually help males desist from criminal behaviour (e.g, Sampson & Laub, 1993; Simons, Stewart, Gordon, Conger & Elder 2002). Nonetheless, according to relational-cultural theory maintaining relationships is central to a girl's healthy development in adolescence. Therefore, it could be that whereas a delinquent romantic partner may increase girls' delinquency, a non-delinquent romantic partner may serve to reduce their delinquent involvement.

Preliminary evidence has shown that women's desistance from crime may be facilitated by fulfilling relationships with romantic partners, particularly if they have

children with their romantic partner (Benda, 2005). However whether or not positive relations with a romantic partner can serve to minimize the seriousness and frequency of adolescent delinquency has yet to be examined.

Other Risk Factors

Although the importance of peers in youthful delinquency is undisputed, the complexity of the relationship remains unclear due to the large number of potential moderators (e.g., gender, parental influence, nature of the relationship) that likely differ in impact on the basis of gender. Although there is some evidence that any number of factors moderates the peer-delinquency link (see e.g., Fergusson et al., 2007; Vitaro, Brendgen, & Tremblay, 2000), the majority of these studies fail to disaggregate the influence of these moderators by gender. Consequently, accounting for other potential moderators and/or mediators of the relationship between antisocial peers and delinquency is essential in order to exclusively examine the mediating effect of peers. Variables of particular importance, and ones used in the present study include psychological variables (e.g., criminal attitudes) and family variables (e.g., family functioning).

Criminal attitudes. Criminal attitudes, otherwise known as antisocial attitudes, are defined as one's approval of criminally oriented norms, rationalizations for law violations, identification with criminal others and taking pride in delinquent acts. Considered one of the *Central Eight* (Andrews & Bonta, 2006), criminal attitudes have been shown to be one of the strongest correlates of crime for youthful offenders (Hubbard & Pratt, 2002; Simourd & Andrews, 1994). A premise of differential

association theory (Sutherland, 1947) is that values, attitudes, and motives for antisocial behaviour are acquired through the frequency, duration, and intensity of one's interactions with antisocial others. More specifically, attitudes in favour of delinquency are acquired within deviant peer groups.

There is some evidence to suggest that the effect of delinquent peers is moderated by criminal attitudes. For example, a longitudinal study by Vitaro et al. (2000) examined variables that could mediate the relationship between the delinquent behaviour of boys and their best friend's deviancy. Not surprisingly they found that antisocial attitudes had a significant main effect on subsequent delinquent behaviour ($\beta = .29$), even after controlling for previous delinquency. However, they also found that criminal attitudes interacted with best friend's deviancy. Namely, for those boys with low criminal attitudes, best friend's delinquency did not contribute to subsequent delinquency. In contrast, best friends' delinquency significantly predicted subsequent delinquent behaviour for those boys who score high on criminal attitudes ($\beta = .25$). Consequently, in order to ascertain peers, as the mediator in the relationship between early maturation and delinquency, rather than antisocial attitudes, this construct was used as a covariate in the present study.

Family. As an adolescent makes the transition from childhood to adolescence, they begin to experience more freedom and spend more time with their peers rather than their family. It is generally accepted that positive involvement and strong supervision by one's parents can protect an adolescent from becoming involved in delinquent acts (Gorman-Smith, Tolan, & Henry, 2000).

Warr (1993) suggests that there are three ways in which parental influence can offset the influence of peers, two of which prevent the initial exposure to antisocial peers, and one that may counteract the effect of already acquired delinquent friends. First, parents could act as a social barrier by spending a large amount of time with their children thereby restricting exposure to delinquent peers and reducing opportunities for delinquency. Second, those children that feel strongly attached to their parents may be less likely to acquire delinquent friends and consequently are less likely to become involved in delinquent acts. Lastly, if adolescents have already acquired delinquent peers, parental influence can counteract their effects if the social bond between them is strong. In other words, adolescents who feel closer to their parents are more likely to be influenced by the moral inhibitions of their parents, and consequently are less likely to become involved in deviant behaviour.

Research examining the protective aspects and associated risks of parental relationships is robust, however which parental measure is best is still debated (i.e., attachment, monitoring, etc.). Simons-Morton, Hartos, and Haynie (2004) examined the indirect effects of parenting behaviour, peer influence, school adjustment and school engagement on minor aggression. They found that both previous aggressive behaviour and peer affiliation increase aggressive behaviour. However, positive parenting behaviour, including parental monitoring, parental expectations, parental support, and parent-child conflict was found to protect against aggressive behaviour.

Warr (1993) found that time spent with one's family was capable of reducing and possibly even eliminating peer influence. Other research has found that lower

levels of parental monitoring and association with deviant peers predict problem behaviour in adolescents (Ary, Duncan, Duncan, & Hops, 1999). In another study, Warr (2005) concluded that parental attachment is a key role in preventing adolescents from acquiring antisocial friends. However, it was found that the effect of parental attachment on delinquent friends was mediated to a substantial degree by parental supervision. This suggests that even if an adolescent feels strongly attached to their parents, without adequate parental supervision, they are still at a higher risk for delinquency.

Overall, there appears to be inconsistent findings as to which parental variable is most salient in predicting adolescent delinquency. Additionally, there are conflicting results as to what parental measure is best suited to understand female delinquency in contrast to male delinquency. Studies that have made gender comparisons between family variable predictors suggest that various family dimensions differentially affect females and males. Specifically, Cernkovich and Giordano (1987) found that lack of parental supervision and a lack of communication with one's parents were significant predictors of delinquency for boys. However, for girls, conflict with one's parents, weak instrumental communication, weak parental support concerning identity issues, and parental disapproval of peers were more strongly related to delinquency. Similar to these findings, Heimer and De Coster (1999) found that girls are more adversely affected by a lack of emotional bond with their parents, while boys are more affected by a lack of direct parental controls (e.g., supervision).

Overall, it is difficult to conclude what parental variable is most important (e.g., attachment, monitoring) for girls compared to boys. Further complicating matters, others have found that family variables can act as mediators in the relationship between antisocial peers and delinquency. Bowman, Prelow, and Weaver (2007) examined the mediating role of delinquent peers in the relationship between parental behaviours and delinquency using a sample of African American adolescents. Results of a regression analysis indicated that maternal monitoring may reduce delinquency among female adolescents. In line with these results, a Swedish study investigating gender differences in drug use on a sample of high school students found that while parental monitoring was higher for females than for males, where there was low parental monitoring in a household, exposure to deviant peers played a larger role in female drug use (Svensson, 2003). In other words, the influence of antisocial peers may be more substantial if parental monitoring is low.

Overall, the aforementioned research suggests that family may serve as either a protective factor or a risk factor for adolescent delinquency. Consequently, a measure of family adaptability and cohesion was used as a covariate in the present study in order to ensure that the differences found among participants can be attributed to peers, and not family variables.

Purpose of the Proposed Research

Drawing upon the strengths and limitations of the current literature and the three aforementioned theories, the research questions and the hypotheses stemming from them are as follows:

Research Question #1: Do negative peer relationships (delinquent vs. non-delinquent) mediate the relationship between early maturation and delinquency?

Although the majority of research examining the relationship between puberty and delinquency has been on girls, it was expected that this relationship will be evident in a combined sample of boys and girls (Beaver & Wright, 2005; Lynne et al., 2007; Negriff et al., 2008).

Research Question #2: Does gender moderate the mediating effect of negative peers in the relationship between early maturation and delinquency? There is fair amount of evidence substantiating the relationship between early maturation and delinquency, particularly when using mixed-gender samples (e.g., Negriff, et al., 2008). Consequently, a mediated model is appropriate in order to better understand, and potentially explain, this relationship. However, given that some research has shown that girls are more detrimentally affected by early maturation than are boys (e.g., Flannery et al., 1993; Moffitt et al., 2001) it is likely that this mediated relationship will be stronger for girls than for boys. Whereas previous research has generally either controlled for the effect of gender statistically or studied all-male samples, this study included gender as moderating variable to examine if the effect of negative peer relations mediates the relationship between early maturation and delinquency differentially for girls and boys. It was hypothesized that this would in fact be the case.

Research Question #3: Does the nature of the relationship (i.e., same-sex, opposite-sex, romantic) increase or decrease the mediated effect of negative peer relations on delinquency? Previous research suggests that the deviancy of male peers

exerts more of an influence on female delinquency than do their same-sex peers (e.g., Stattin & Magnusson, 1990). Additionally, although inconclusive, there is literature to suggest that romantic partners may also play a role in female delinquent behaviour (e.g., Benda, 2005; Halpern et al., 2007). Consequently, it was hypothesized that the nature of the relationship, specifically opposite-sex relationships, would strengthen the mediation effect of negative peer relations on delinquency for girls. Previous research has shown that boys commit the majority of their crime with other boys (Warr, 1996), and that exposure to opposite-sex peers can in fact operate to reduce delinquency for boys (Haynie et al., 2007). Therefore it was hypothesized that for boys, that the delinquency of their same-sex peers would play a larger role in their subsequent delinquency than will their opposite-sex peers.

Research Question #4: Do positive relationships with one's peers buffer the effect of early maturation on delinquency? Although previous research with mixed gender samples suggests that positive peer relationships may serve as a protective factor for youthful offenders (Hoge et al., 1996), others have found that adolescents who report positive relations with their peers are *more* rather than *less* delinquent (Agnew & Brezina, 1997). Therefore, it was anticipated that positive relationships may in fact act as a buffer to reduce delinquency. However, this effect will likely diminish if these positive relationships are with pro-criminal friends. Model 2 is therefore exploratory in nature and will help to clarify whether positive relationships are protective in nature (at least those with non-delinquent peers) or whether they carry with them the same risks as negative peer relationships for both girls and boys.

Research Question # 5: Does gender moderate the buffering effect of positive relationships? (i.e., do positive relationships buffer the effect of early maturation for girls and boys differentially?) Based upon RCT, the importance of relationships is said to be central to the well being of females. Therefore, it is expected that the buffering effect of positive relationships will be stronger for girls than for boys. That is to say if a girl has fulfilling relationships with others, it is less likely that she will feel pressured into moulding herself to fit the relationship and therefore less likely to commit acts of deviancy in order to maintain a failing relationship.

Research Question #6: Does the nature of the relationship (i.e., same-sex, opposite-sex, romantic) influence the magnitude of the mediation effect of positive peer relations on delinquency? In addition to the limited research examining the protective aspect of peer relations, few studies have examined the types of peer relationships individually. Consequently, this question was exploratory in nature and no formal hypothesis were made in regards to males or females.

Method

Participants

Participants were comprised of youthful offenders from one of three young offender facilities located in Brampton, Ontario including: 1) Roy McMurtry Youth Center; 2) Peel Female Attendance Centre and 3) Marjorie Amos Residence. The Roy McMurtry Center is 192-bed closed custody facility, run by the Ministry of Children and Youth Services, to accommodate both female and male youth serving secure custody sentences. The Peel Female Attendance Center, run by the Elizabeth Fry

Society of Peel-Halton, provides individual support services, including cognitive behavioural therapy for young women in conflict with the law serving a sentence in the community. Lastly, the Marjorie Amos Residence, also run by the Elizabeth Fry Society of Peel-Halton, is a ten-bed open custody facility for young women between the ages of 12-17 who are in conflict with the law.

Data were collected on 21 girls, aged 15 to 18 ($M = 16.71$, $SD = .84$) and 37 boys, aged 16 to 20 ($M = 17.14$, $SD = 1.03$). As several questionnaires were deemed unreliable (i.e., circled 'sometimes' throughout entire questionnaire; indicated friend was both male and female) six male participants were dropped from the analysis resulting in a new subsample of 31 boys (aged 16 to 20, $M = 17.13$, $SD = 1.09$). All of the male participants were recruited from the closed custody facility (i.e., RMYC). The females were recruited from all three sites; specifically, there were three females from open custody, five from the attendance center, and 13 from the closed custody facility. The primary inclusion criterion was that the youthful offender had been newly charged and/or convicted of a crime.

The majority of the females were Caucasian (61.9%), followed by Aboriginal (9.5%), African American (9.5%), other (14.3%) and unknown (4.8%). The majority of the males were African American (51.6%), followed by Caucasian (9.7%), Aboriginal (9.7%), Asian (6.5%), Hispanic (6.5%), and other (16.1%). Of the total sample, 76.2% of the females and 80.6% of the males were raised by their natural parents. Both the females ($M = 9.57$, $SD = 1.17$) and the males ($M = 9.84$, $SD = 1.04$) had an average of a grade nine education.

Although criminal history for the youth was not retrieved in this study, demographics of the population at the Roy McMurtry Youth Center (RMYC) was provided by the facility. Of the youth who had been at the RMYC between July 2009 and February 2010, the five offence categories that received the most male detention admissions include serious violent offences (34.6%), administration of justice charges (14.4%), weapons offences (8.4%), assault and related offences (7.7%) and break and enter related offences (7.1%). The five offence categories that received the most female detention admissions include administration of justice offences (38.4%), assault and related offences (17.7%), miscellaneous offences against the person (8.5%), serious violent offences (7.9%) and weapons offences (6.1%). Of these offences, serious violent offences (36.4%) and assault and related offences (21.2%) were the two most common in custody admissions for males, whereas administration of justice offences (64.3%) and assault and related offences (28.6%) were most common for custody admissions for females. The average length of stay in detention was 16.2 days for males and 16.7 days for females. For youth in custody, the average length of stay was 105.4 days for males (range 1 day to 6 months) and 23.5 days for females (range 1 day to 3 months).

Measures

Demographic questionnaire. Information on gender, ethnicity, date of birth and education were obtained using a basic demographic questionnaire (see Appendix A).

Early maturation. In order to determine the rate of physical maturation of the participants, the Pubertal Development Scale (PDS; Petersen, Crockett, Richards, & Boxer, 1988) was used (see Appendix B). The PDS was designed to assess a youth's rate of maturation in biological reference points (i.e., voice changes, age of menarche). There are five markers of pubertal development specific to developmental changes for each gender that are rated on a 4-point scale (1 = *has not yet begun*, 2 = *has barely started*, 3 = *is definitely underway*, 4 = *growth or development are complete*). In longitudinal and cross-sectional studies, individual item scores are summed and divided by five to preserve the original metric of the scale.

Given the retrospective nature of the study two adjustments were made. First, assuming that most youth would have completed maturation at the time of data collection, youth who indicated having completed development for a particular developmental marker were then asked when they felt they began their development (< 9, 10-11, 12-13, or 14+ years of age). Second, scoring adjustments were made to the scale. Specifically, if the youth had *not yet begun*, felt that they had *barely started*, or *definitely started* development of a particular pubertal marker, they were given a score of -1. Thus, given that all of the youth in the sample were over 15 when the data were collected, a negative score was indicative of late maturation for the pubertal marker in question. Individuals who answered *completed* for a particular pubertal marker and indicated they started development at either '< 9' or '10-11' were assigned a score +1 (12 to 13 is the approximate age of onset for all pubertal markers combined for males and females; see Herman-Giddens, 2006; Sun, Schubertm, Chumlea, Roche, Kulin, et

al., 2002). Thus, a positive score was indicative of early maturation for the pubertal marker in question. Similarly, individuals who answered *completed* for a particular pubertal marker and indicated that they started development for the marker between '12-13' were given a score of zero. Thus, a score of zero was equated with average pubertal onset. Lastly, individuals who answered *completed* for a particular pubertal marker and indicated that they started development for the marker at '14+' were assigned a score of -1, indicative of late maturation. Scores for each marker were then summed with total scores ranging from -5 to 5 with higher positive scores indicating having reached more pubertal markers at an earlier age.

Initial development of the PDS has shown that it is a reliable and valid measure across differing methodologies (i.e., cross-sectional and longitudinal; Petersen et al., 1987). The PDS has been shown to have good internal consistency for both boys and girls (.66 to .81) and good predictive validity when examining heterosexual peer involvement (Robertson et al., 1992). Marshall and Tanner's (1969, 1970) five stages of development is a commonly used and validated method of measuring physical development; this approach uses photographs or drawings of progressive stages of growth of secondary sexual characteristics (e.g., breasts, pubic hair etc.). The PDS has good convergent validity with a physician's ratings on the Tanner's Sexual Maturation Scale (Marshall & Tanner, 1969, 1970) with correlations between 0.61 and 0.67 evident in a sample of girls (Brooks-Gunn et al., 1987). Both Petersen et al. (1987) and Brooks-Gunn et al. (1987) conclude that the PDS is an adequate measure for rough estimates of maturation.

Negative relationships. The Measure of Criminal Attitudes and Associates (MCAA; Mills, Kroner, & Forth, 2002) was used to assess negative peer and negative boyfriend/girlfriend relationships (see Appendix C). The MCAA is comprised of two parts: Part A is a self-report quantitative measure of criminal friends, and Part B contains four attitude scales. In Part A, participants were asked to recall the four friends they spend the most of their free time with while in the community. For each person, the participant then indicated approximately how much of their free time they spent with this friend (0–25%, 25–50%, 50–75%, 75–100%). They also answered four questions about each identified friend: 1) Has person #1 ever committed a crime; 2) Does person #1 have a criminal record; 3) Has person #1 ever been to jail; and 4) Has person #1 tried to involve you in a crime? There were also two modifications made to the original scale. First, the youth were asked to indicate the type of relationship they had with each person (i.e., friend, acquaintance, or boyfriend/girlfriend), their age, and their gender. Second, the scale was modified to ask the youth how much crime they felt they did before meeting each peer (*much less, somewhat less, about the same, somewhat more, or much more*).

Part A is used to calculate 1) the ‘number of criminal peers’, calculated by totaling the number of friends that the participant identified as being involved in criminal activity (range from 0 to 4) and 2) a ‘criminal friend index’ which is calculated by assigning a number to the percentage of time spend with each associate (e.g., 1 = 0–25%, 2 = 25–50% etc.) and then multiplying this number by the number of ‘yes’ responses for the four questions inquiring about the friend’s criminality. The resulting

products are added together to produce the Criminal Friend Index (CFI). The CFI can range from 0 to 64 with higher scores indicating that more time is spent in the company of antisocial peers.

As part A of the MCAA measures both time and association with criminal others, it is not appropriate to calculate a reliability coefficient and therefore none are reported in the present study (J. Mills, personal communication, April 22nd, 2010). However, for both a student sample and offender sample, the Number of Criminal Friends ($r = .38$ and $r = .56$, respectively) and Criminal Friends Index (CFI; $r = .48$, and $r = .60$ respectively) were significantly correlated to the MCAA total score (Mills et al., 2002). Furthermore, for adult male offenders, the Number of Criminal Friends and the CFI were both predictive of new charges ($AUC = .73$ and $AUC = .72$ respectively) and suspensions/revocations ($AUC = .63$ and $AUC = .64$ respectively) (Mills et al., 2002).

Positive relationships. A modified version of the Relational Health Indices (RHI; Liang et al., 2002) was embedded within the MCAA to measure the extent to which positive peer relations act as a buffer to one's involvement in delinquency (see Appendix C). Although the scale was designed to assess the quality of one's relationships with one's peers, mentors, and community, for the purpose of this study only the peer scale of the RHI (RHI-P) was used. The modified scale is an 11-item self-report scale that assesses the quality of the respondent's relationship with each friend and/or boyfriend/girlfriend previously identified by the MCAA. The scale differentiates between three aspects of relational quality: authenticity, engagement, and empowerment/zest. The questions ask about the positive aspects (e.g., I feel understood

by my friend/partner) of the participant's relationship with his/her four closest friends (and/or boyfriend/girlfriend) and are rated on a scale from 1 (= never) to 5 (= always). As some youth only had one or two friends, scores for each friend were summed and then divided by the number of friends identified. Therefore, total scores range from 11 to 55 with higher scores indicating more positive relationships with one's peers and/or boyfriend/girlfriend.

The RHI has been shown to have good reliability (Cronbach's alpha = .85), and convergent validity ($r = .50$ to $.69$) with other measures of relational health (e.g., perceived mutuality in close relationships, support, depth) when used on female college students (Liang et al., 2002). Good reliability was also found when used on both female (Cronbach's alpha = .92) and male (Cronbach's alpha = .93) undergraduate students (Barrett, 2008).

Criminal attitudes. The Measure of Criminal Attitude and Associates (MCAA; Mills et al., 2002) was also used to assess the presence of criminal attitudes. Part B of the scale contains four attitude scales: Violence, Entitlement, Antisocial Intent, and Associates, although for the purpose of this study, only the total attitude score was used (see Appendix D). Participants respond to a dichotomous choice of agree/disagree for each of the 46 statements presented. Total scores range from 0 to 46 with higher scores reflecting the stronger presence of criminal attitudes.

The MCAA attitudes component has evidenced good test-retest reliability ($r = .65$ to $r = .81$) when adult male offenders were assessed four weeks apart. Furthermore, this measure has demonstrated good internal consistency for a sample of adult male

offenders (Cronbach's alpha ranged from .63 to .90) and reasonable discriminant validity with measures of negative affect (i.e., anger, anxiety and depression; $r = .04$ to .36; Mills et al., 2002). Convergent validity with other measures of criminal attitudes including the Pride in Delinquency scale ($r = .66$) and the Criminal Sentiments Scale ($r = .76$) has also been established (Mills et al., 2002). The MCAA attitudes domain has also been shown to have good predictive validity when predicting both general ($AUC = .68$) and violent recidivism ($AUC = .71$) among adult male offenders (Mills, Kroner & Hemmati, 2004). Good internal consistency was also found when used on both sex offenders (Cronbach's alpha ranged .52 to .71) and non-sex offenders (Cronbach's alpha ranged .71 to .91) (Mills, Anderson, & Kroner, 2004).

Family functioning. Family functioning was assessed via the Family Adaptability and Cohesion Scale II (FACES II; Olson, Portner, & Bell, 1982). The FACES II is a self-report instrument that measures dysfunctional family processes (see Appendix E). The scale is composed of 30 family-related statements which participants rate on a 5-point likert-type scale ('almost never' to 'almost always'), and provides an overall Family Type score as well as two scale scores. The Cohesion scale measures the degree of emotional bonding among family members and is categorized dimensionally as disengaged, separated, connected and very connected. The Adaptability scale refers to the ability of the family to change in response to stress, and is categorized as rigid, structured, flexible and very flexible. Combining the scale scores provides a Family Type score that is categorized as extreme, mid-range, moderately balanced or balanced

(Olson, 2000). However, for the purpose of this study, only the continuous measure was used with higher scores indicative of a higher family functioning.

The FACES II has demonstrated good internal consistency (Cronbach's alpha range from .78 to .88; Olsen et al., 1982). Furthermore, the test-retest reliability was strong for both the cohesion scale ($r = .83$) and adaptability scale ($r = .80$) with a four to five week lapse between tests (Olsen et al., 1982). Concurrent validity with another measure of family functioning, namely the Dallas Self-Report Family Inventory (SFI), has also been reported with correlations between the SFI measure of family health and FACES II of .93 for cohesion and .79 for adaptability (Hampson, Hulgus, & Beavers, 1991). Overall, Olson et al. (1982) reported that both the cohesion scale and adaptability scale are useful in distinguishing dysfunctional from non-dysfunctional families.

Outcome measures: Delinquency. As a measure of delinquency the criminal history subcomponent of the Youth Level of Service/Case Management Inventory (YLS/CMI; Hoge & Andrews, 2002) was utilized (see Appendix F) in addition to a proxy measure of delinquency entitled the Youth Self-Report History Questionnaire (YSRHQ; Rowe, 2008; see Appendix G).

The YLS/CMI is a tool derived from the LSI-R which was designed to help youth workers and/or psychologists identify the youth's major needs, strengths, barriers, and incentives, and to produce an effective case management plan. Although this measure is typically scored based upon file information and official criminal records, for the present study the criminal history subcomponent was administered in a

self-report format. Specifically, the youth were asked five yes/no questions about their criminal history (e.g., Have you been convicted of three or more previous offences?). Total scores on this subscale ranged from 0 to 5 with higher scores indicative of a more extensive criminal history.

The YLS/CMI has been shown to have moderate reliability with alpha coefficients ranging from .60 to .77 for all eight of its domains, with the exception of substance abuse ($\alpha = .56$; Schmidt, Hoge, & Gomes, 2005). Construct validity has also been demonstrated (Schmidt, Hoge, & Robertson, 2002) when compared to parent and youth self-report versions of the Child Behavior Checklist (CBCL; Achenbach, 2001; $r = .37$ and $r = .43$ respectively). Additionally, the YLS/CMI 'prior and current offences' subtotal has been shown to predict re-offence ($AUC = .68$), non-sexual violent re-offence ($AUC = .72$), and violent re-offence ($AUC = .66$) among adolescents who had committed sexual offences (Viljoen, Elkovitch, Scalora, & Ullman, 2009).

The YSRHQ is composed of 76 items in total. However, only 22 items were used as a proxy measure of delinquency. Specifically, this subset of questions determined the number and range of delinquent acts a youthful offender has taken part in. The youth is asked how many times they did something with offences ranging from minor (e.g., How many times did you get drunk?) to more serious acts of delinquency (e.g., How many times have you failed on probation). In order to create a continuous measure of delinquency, the responses were re-coded (0 = none, 1 = one or more) and summed. Consequently, total scores can range from 0 to 22 with higher scores indicting involvement in a wider range of delinquent acts. As the YSRHQ measures a wider

range of delinquent acts, this measure was the preferred dependent measure for this study. However, as no psychometric data is available for this instrument, the YLS/CMI criminal history subcomponent was included in the event that the YSRHQ was not reliable or valid. Consequently, the reliability of the YSRHQ and concurrent validity with the criminal history component of the YLS/CMI was examined and is discussed in the results section.

Procedure

The assessment battery used in the study was administered to the youth at one of the three aforementioned sites located in Brampton, Ontario. Recruitment was conducted on site by the manager of the unit/facility or by a graduate level researcher. Staff members were provided a written recruitment notice to give the youth an idea of the purpose of our study prior to our arrival at the site (see Appendix H). Upon arrival, each potential participant was informed that we were looking to speak with them about participating in a research study that is looking at the relationship between maturation, gender, friends, family and delinquency. Once a youth had expressed an interest in talking to the researcher, he/she was brought to a private room where the study was described in more detail as per the information provided in the informed consent (see Appendix I). If consent was obtained, youth who were 16 or older were able to participate in the study immediately whereas parental consent was required for youth who were 15 or under. The researcher (i.e., the principal investigator or two graduate level research assistants) directly administered the questionnaires. Youth were given the option to complete the questionnaires in written or oral format (read directly by the

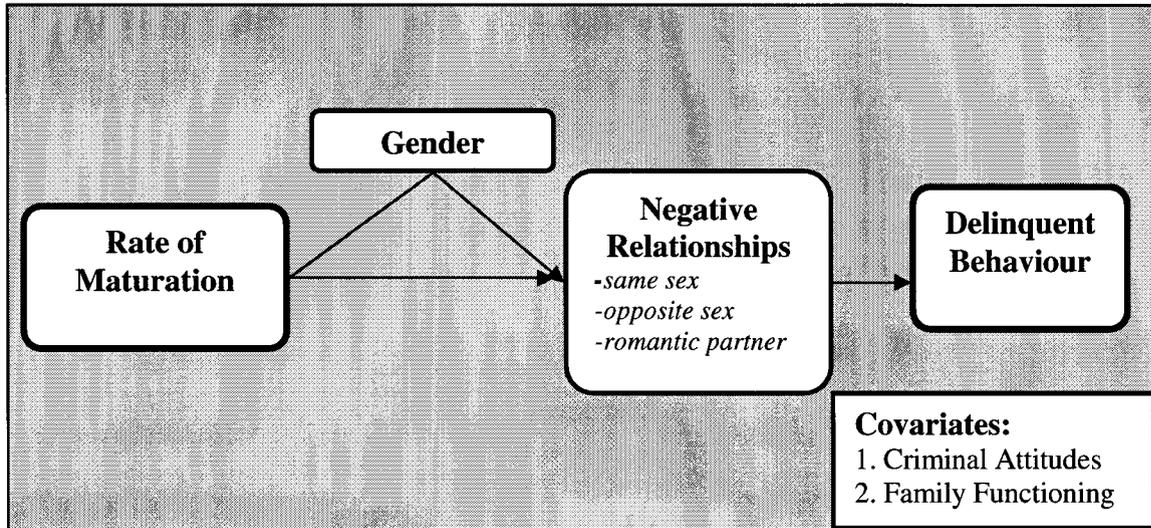
researcher). A debriefing form was also provided at the end of the session (see Appendix J). Administration of the self-report battery took approximately 30 minutes. Custody youth were given \$5.00 for canteen use (the money was placed in their canteen fund); community youth were given a \$5.00 gift card.

Models To Be Tested

Model 1. Research questions 1 through 3 are addressed in model 1. Specifically, it guided the examination of the relationship between early maturation, gender, negative relationships (i.e., delinquent vs. non-delinquent), and delinquency (see Figure 2). This model tested three research questions: 1) Do negative relationships (delinquent vs. non-delinquent) mediate the relationship between early maturation and delinquency; 2) Does gender moderate the mediated relationship between early maturation, negative relationships and delinquency; and 3) Does the nature of the relationship (i.e., same-sex, opposite sex, romantic partner) affect the strength of the mediated effect of negative peer relationships differentially for girls and boys? This breakdown will help to address the question of whether opposite-sex peers or romantic partners influence girls' delinquent behaviour to a greater extent than same-sex peers.

Figure 2

Testing Moderated-Mediation Effects of Gender and Negative Relationships on Delinquency



Model 2. Research questions 3 through 6 are addressed in Model 2.

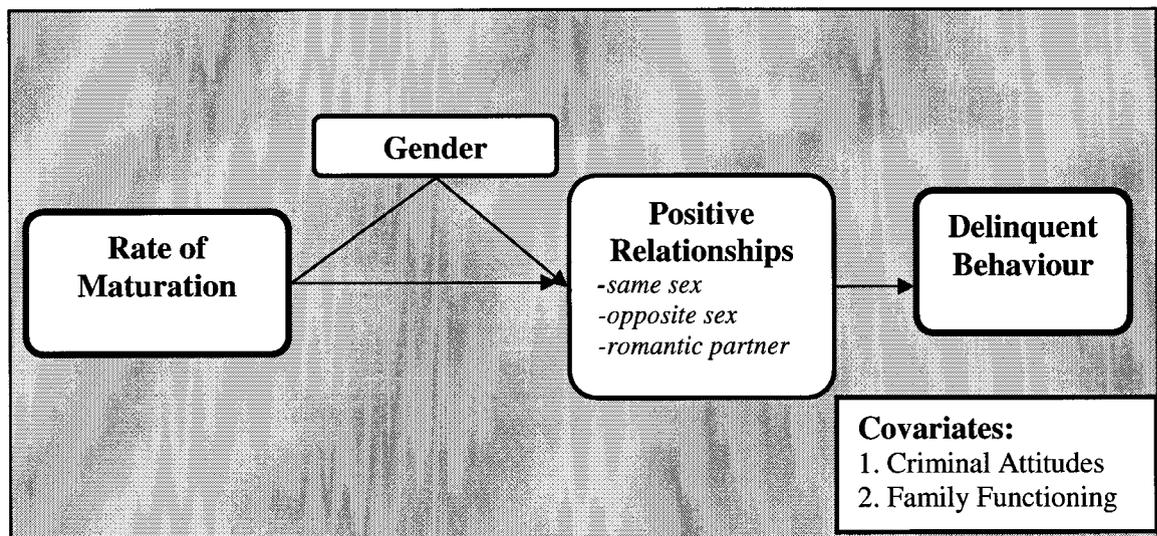
Specifically, this model examined whether positive relationships can act as a buffer to the relationship between early maturation and delinquency (see Figure 3). Positive relationships were defined in the context of RCT and included four facets of one's relationship: 1) mutual engagement; 2) authenticity; 3) empowerment/zest; and 4) the ability to deal with conflict.

Model 2 addressed research questions 4 through 6 including the following questions: 1) Do positive relationships mediate the relationship between early maturation and delinquency; 2) Does gender moderate the mediated relationship between early maturation, positive relationships and delinquency; and 3) Does the

nature of the relationship (i.e., same-sex, opposite sex, romantic partner) differentially affect the strength of mediation effect of positive relationships for girls when compared to boys? This breakdown will help to address the question of whether positive relationships with opposite-sex peers or romantic partners serve to reduce girls' delinquent behaviour (i.e., act as a buffer) to a greater extent than their same-sex peers.

Figure 3

Testing Moderated-Mediation Effects of Gender and Positive Relationships on Delinquency.



Data Analysis

The data were entered into SPSS Version 18 for analyses. Following data screening procedures, independent t-tests and descriptive statistics were used to examine differences between female and male youthful offenders. Reliability analysis were also conducted to assess the internal consistency of the measures for males and females. This was followed by a series of correlational analyses to assess the

relationship between the independent variables and the dependent variables for both males and females. To test research questions 1 and 4, mediation analyses were conducted. The remaining research questions were examined using moderated-mediation analysis. Both of these analyses are described below.

Mediation analysis. Baron and Kenny (1986) propose a multistep approach to mediation analysis. Specifically, they argue that mediation is demonstrated by identifying significant relations between a) the predictor and the dependent variable (criminal history) (i.e., path c), b) the predictor (antisocial attitudes) and the proposed mediator (antisocial peers) (i.e., path a), and c) the proposed mediator and the dependent variable (i.e., path b). Finally, the relation between the predictor and the dependent variable should be substantially decreased following the inclusion of the proposed mediator in the model (i.e., path c'). Recently, however, methodologists have identified limitations to this approach (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). As the time between the predictor variable and the mediating variable becomes longer, the strength of the relationship gets smaller as a result of competing causal variables or random factors (Shrout & Bolger, 2002). Consequently, it is recommended that mediation analyses be based on formal significance tests of the indirect effect— ab , of which the Sobel (1982) test is the best known. As argued by Preacher and Hayes (2004), this approach is more powerful than the stepwise approach advocated by Baron and Kenny (1986) because it more directly addresses mediation. Although valuable in mediation analysis, the Sobel test assumes that the indirect effect ab is normally distributed. This assumption is questionable, because the distribution of

ab is known to be non-normal, even when the variables constituting the product ab are normally distributed (Edwards & Lambert, 2007). Therefore, bootstrapping is the preferred approach given that it avoids the power problems associated with non-normal sampling distributions of an indirect effect (MacKinnon, Lockwood, & Williams, 2004). Simply put, bootstrapping estimates the sampling distribution of the indirect effect non-parametrically which is then in turn used to generate confidence intervals for the indirect effect. If the confidence intervals do not contain zero, then one can conclude that there is in fact, an indirect effect. The hypothesized indirect effects (hypotheses 1 and 4) were tested using an application (i.e., macro) provided by Preacher and Hayes (2004).

Moderated-mediation analysis. Following the methods outlined by Preacher, Rucker, and Hayes (2007), the moderated-mediation models were tested. Moderated mediation is said to occur when the strength of an indirect effect (i.e., a mediator) is contingent upon a level of another variable (i.e., a moderator); this is often referred to as a *conditional indirect effect* (Preacher, Rucker, & Hayes, 2007). The effects (i.e., negative relationships and positive relationships) were examined using non-parametric bootstrapping techniques to estimate the regression coefficients for each model. A bootstrapping approach was chosen once again as this method has the highest power and the best Type I error control (Hayes, 2009). If the confidence intervals generated by bootstrapping do not contain zero, then one can conclude that there is in fact a conditional indirect effect.

Results

Data Screening

Missing data, outliers, influential cases, and assumptions. A missing value analysis revealed minimal missing data (44.2% of the participants answered every item in each questionnaire). Specifically, of the individual items missing data, the percentage missing ranged from 3.2% to 12.9% for the males and from 4.8% to 19.0% for the females. Within the associate domain of the MCAA, four youth felt they only had one or two friends (Note: not including this measure, missing data for the females ranged from 4.8% to 9.5%). Consequently, total scores on this subscale were calculated using only the friends identified (J. Mills, personal communication, April 9th, 2010). Missing items on the attitudes domain of the MCAA (7 items for 4 individuals) were pro-rated based upon their mean score for each attitude subscale (i.e., Violence, Entitlement, Antisocial Intent, and Associates), as recommended in the scoring manual. Missing values on individual items were substituted with the item-level mean (FACES & RHI) or the item-level mode (PDS) and were calculated separately for each gender.

A standardized z -score greater than 3.29 indicates the presence of an outlier. Upon inspection of z -scores, no univariate outliers were identified on any of the measures. However, one outlier was identified on the RHI-peers measure through examination of its corresponding box-plot (i.e., one case was clearly detached from the rest of the distribution, $z = -2.99$). Consequently, this score was brought within range while still maintaining its relative rank in the remaining data.

To test for the presence of multivariate outliers, Mahalanobis distance was examined. The Mahalanobis distance values obtained were then compared to the critical value listed in the χ^2 distribution ($df = 6, p = .001$). Using a critical value of 22.46, no multivariate outliers were identified. In order to look for influential cases, a triangulation of methods was utilized. Specifically, the scatter plots examined included Cook's D, DFIT, and Leverage. A case deemed influential on two or more of these indexes would be classified as influential; however, no influential cases were identified (Note: the criterion used for each plot when determining whether a particular case was influential are as follows: Cook's D > 1.00 ; Leverage ($2p/N$) > 0.01; DFIT +/- 1.00).

To assess for multicollinearity the correlation matrix was examined as correlations in the range of .90 can be problematic (Tabachnick & Fidell, 2007). Overall, correlations among the independent variables were found to be within an acceptable range ($r = .01$ to $.61$). The assumption of homogeneity of error variance, a necessary assumption in moderated regression, was also met (Bartlett's $M = .668, p = .41$). Lastly, tests for the assumptions of normality, linearity, and homoscedasticity were met for the total sample, and when examined for males and females separately.

Power

According to Fritz and McKinnon (2007), utilizing a bias-corrected bootstrap estimate of the indirect effect is the most powerful test, compared to other tests of mediation (i.e., Baron and Kenny's causal steps approach, Sobel first-order test). The sample size necessary to achieve .80 power ranges from 53 ($\alpha = .39, \beta = .39$) to 78 ($\alpha = .39, \beta = .59$) when using bootstrap estimates of the indirect effect.

Preacher and his colleagues suggest that in order to detect a moderate conditional indirect effect ($R^2 = .39$) a sample size of 50 is necessary to maintain sufficient power ($power = .70$) when using the bootstrapping method (Preacher et al., 2007). Should the effect size be smaller than predicted (i.e., a small effect; $R^2 = .14$), the power of the test would be drastically reduced ($power = .08$).

Descriptive Statistics

Descriptive statistics for each measure, including the mean, standard deviation and range for both males and females are provided in Table 1. Furthermore, t-tests were conducted to assess mean differences between genders on each measure. Overall, females ($M = 0.14, SD = 2.8$) scored significantly higher on the Pubertal Development Scale than the males ($M = -3.35, SD = 1.7$) indicating that the females hit more pubertal markers at an earlier age than the males, $t(50) = -2.93, p < .01$. Furthermore, on the attitudes domain of the MCAA, males ($M = 31.29, SD = 7.7$) scored significantly higher than the females ($M = 25.62, SD = 7.2$), $t(50) = 2.67, p < .05$. Lastly, females scored significantly higher ($M = 45.11, SD = 7.07$) on the RHI than the males ($M = 39.48, SD = 6.64$) suggesting they have more positive relationships with their peers than their male counterparts, $t(50) = -5.61, p < .001$. No other significant differences were found on the remaining measures.

Table 1

Descriptive Statistics.

| Measure | Females | | Males | | Diff. |
|---------------|--------------|-----------|--------------|----------------|----------|
| | Mean (SD) | Range | Mean (SD) | Range | |
| PDS | .14 (2.8) | -4 to 5 | -3.35 (1.7) | -5 to 1 | -3.49 ** |
| MCAA-P | 13.48 (9.9) | 0 to 38 | 16.84 (14.4) | 0 to 53 | 3.36 |
| RHI | 45.11 (7.1) | 24 to 55 | 39.48 (6.6) | 21.25 to 51.25 | -5.64* |
| FACES-II | 90.23 (20.9) | 56 to 126 | 90.11 (16.2) | 53 to 128 | 5.15 |
| MCAA-A | 25.62 (7.2) | 12 to 40 | 31.29 (7.7) | 18 to 46 | 5.67* |
| YLS/CMI-hist. | 2.81 (1.7) | 0 to 5 | 2.58 (1.5) | 0 to 5 | -.23 |
| YSRHQ | 11.95 (4.9) | 3 to 22 | 12.81 (4.1) | 5 to 21 | .85 |

Note. PDS: Pubertal Development Scale. MCAA-P: Measure of Criminal Attitudes and Associates- Peers subtotal. RHI: Relational Health Indices. FACES-II: Family Adaptability and Cohesion Evaluation Scale. MCAA-A: Measure of Criminal Attitudes and Associates- Attitudes subtotal. YLS/CMI hist.: Youth Level of Service/Case Management Inventory-Criminal History subtotal. YSRHQ: Youth Self-report History Questionnaire.

* $p < .01$ ** $p < .001$

Reliability Analysis

Cronbach's alpha was calculated to assess the internal consistency of each measure for both females and males and for the combined sample (see Table 2). Overall, reliability was quite good for each measure. One exception was the reliability of the puberty measure, specifically for the boys. Given the large proportion of African American boys in the current sample (51.6%), it could be that this measure is not a reliable measure for this ethnic group as they timing of their pubertal development may differ from other ethnic groups (e.g., Sun et al., 2002).

Table 2

Reliability of Measures: Cronbach's Alpha.

| Measure (# of items) | Females | | Males | | Total sample | |
|----------------------|----------|--------------|----------|--------------|--------------|--------------|
| | <i>n</i> | <i>Alpha</i> | <i>n</i> | <i>Alpha</i> | <i>n</i> | <i>Alpha</i> |
| PDS (5) | 21 | .74 | 31 | .56 | n/a | n/a |
| RHI (44) | 18 | .91 | 29 | .93 | 47 | .94 |
| FACES- II (30) | 21 | .92 | 31 | .88 | 50 | .90 |
| MCAA-A (46) | 19 | .85 | 29 | .87 | 48 | .88 |
| YLS/CMI-hist. (5) | 19 | .79 | 28 | .65 | 47 | .72 |
| YSRHQ (22) | 18 | .81 | 27 | .80 | 45 | .80 |

Note. PDS: Pubertal Development Scale. RHI: Relational Health Indices. FACES-II: Family Adaptability and Cohesion Evaluation Scale. MCAA-A: Measure of Criminal Attitudes and Associates- Attitudes subtotal. YLS/CMI hist.: Youth Level of Service/Case Management Inventory-Criminal History subtotal. YSRHQ: Youth Self-report History Questionnaire.

Concurrent Validity between the YSRHQ and YLS/CMI Criminal History

Component

The reliability and validity of the Youth Self-Report History Questionnaire (YSRHQ), was unknown at the beginning of this study. Consequently, the criminal history domain of the YLS/CMI, a measure with established reliability and validity, was also included in the event that the YSRHQ evidenced poor reliability or validity. Given that this was not the case (i.e., the YSRHQ and the criminal history domain of the YLS/CMI were highly correlated for males ($r = .62, p < .001$), females ($r = .63, p < .01$), and the total sample ($r = .62, p < .001$)), the YSRHQ was used as the dependent variable as originally planned. Furthermore, as seen in Table 2, the reliability of the YSRHQ is high for males (Cronbach's $\alpha = .80$), females (Cronbach's $\alpha = .81$) and the total sample (Cronbach's $\alpha = .80$).

Correlations among Measures

Pearson correlation coefficients were used to examine the relationships among the various measures for the combined sample (see Table 3) as well as for females (see Table 4) and males (see Table 5) separately. Significant correlations emerged between the MCAA- attitudes component and the MCAA-peer component for the combined sample and when examined separately by gender. Furthermore, both the MCAA-attitude and MCAA-peer measures were significantly correlated with the YSRHQ for the total sample and both subsamples.

Table 3

Correlation Matrix for Total Sample.

| | MCAA-P | RHI | FACES-II | MCAA-A | YLS/CMI | YSRHQ |
|---------------|--------|------|----------|---------|---------|--------|
| PDS | .06 | .33* | .18 | -.11 | .02 | .00 |
| MCAA-P | | -.14 | -.01 | .54 *** | .28* | .58*** |
| RHI | | | .30* | -.27 | -.06 | -.04 |
| FACES-II | | | | -.14 | -.12 | -.10 |
| MCAA-A | | | | | .26 | .61*** |
| YLS-CMI-hist. | | | | | | .62*** |

Note. PDS: Pubertal Development Scale. MCAA-P: Measure of Criminal Attitudes and Associates- Peers subtotal. RHI: Relational Health Indices. FACES-II: Family Adaptability and Cohesion Evaluation Scale. MCAA-A: Measure of Criminal Attitudes and Associates- Attitudes subtotal. YLS/CMI hist.: Youth Level of Service/Case Management Inventory-Criminal History subtotal. YSRHQ: Youth Self-report History Questionnaire.

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

Table 4

Correlation Matrix for Female Subsample.

| | MCAA-P | RHI | FACES-II | MCAA-A | YLS/CMI | YSRHQ |
|---------------|--------|------|----------|--------|---------|--------|
| PDS | .07 | .24 | .26 | .19 | -.02 | .09 |
| MCAA-P | | -.32 | -.00 | .63** | .31 | .75*** |
| RHI | | | .41 | -.19 | -.01 | -.09 |
| FACES-II | | | | -.09 | .13 | .12 |
| MCAA-A | | | | | .34 | .66** |
| YLS-CMI-hist. | | | | | | .63** |

Note. PDS: Pubertal Development Scale. MCAA-P: Measure of Criminal Attitudes and Associates- Peers subtotal. RHI: Relational Health Indices. FACES-II: Family Adaptability and Cohesion Evaluation Scale. MCAA-A: Measure of Criminal Attitudes and Associates- Attitudes subtotal. YLS/CMI hist.: Youth Level of Service/Case Management Inventory-Criminal History subtotal. YSRHQ: Youth Self-report History Questionnaire.

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

Table 5

Correlation Matrix for Male Subsample.

| | MCAA-P | RHI | FACES | MCAA-A | YLS/CMI | YSRHQ |
|---------------|--------|-----|-------|--------|---------|--------|
| PDS | .30 | .00 | -.03 | .13 | -.05 | .08 |
| MCAA-Peers | | .02 | -.02 | .49** | .30 | .51** |
| RHI | | | .25 | -.14 | -.17 | .08 |
| FACES-II | | | | -.20 | -.37* | -.33 |
| MCAA-A | | | | | .28 | .60** |
| YLS-CMI-hist. | | | | | | .62*** |

Note. PDS: Pubertal Development Scale. MCAA-P: Measure of Criminal Attitudes and Associates- Peers subtotal. RHI: Relational Health Indices. FACES-II: Family Adaptability and Cohesion Evaluation Scale. MCAA-A: Measure of Criminal Attitudes and Associates- Attitudes subtotal. YLS/CMI: Youth Level of Service/Case Management Inventory-Criminal History subtotal. YSRHQ: Youth Self-report History Questionnaire. * $p < .05$ ** $p < .01$ *** $p < .001$

Descriptive Overview of Pubertal Development

As previously mentioned, females scored significantly higher on the Pubertal Development Scale than the males. The number of youth who indicated that they had completed, definitely started, barely started or not started each developmental marker is described in Table 6. Overall, a larger proportion of females than males indicated having completed each pubertal marker. It should be mentioned that instructions for the scale were not always followed resulting in youth who indicated when they started development in a particular marker, even if they had not indicated they were complete (i.e., youth indicated *barely started* on a particular marker, but also circled an age when

they felt they started in the *complete* section). Consequently, when an age of onset was provided, this was used to calculate the total score on this scale.

Table 6
Descriptive Overview of Responses on the Pubertal Development Scale.

| Pubertal Marker | Females n (%) | | | | | | | | |
|---------------------|------------------|----------------|--------------------|------------|--|----------|----------|-----------|----------|
| | Not started | Barely Started | Definitely Started | Complete | If complete, how old when started? (n) ^a | | | | |
| | | | | | <9 | 10-11 | 12-13 | 14+ | |
| Growth in height | 1 (4.8) | 2 (9.5) | 6 (28.6) | 12 (57.1) | 16 | 2 (12.5) | 7 (43.8) | 2 (12.5) | 5 (31.3) |
| Growth in body hair | 0 (0.0) | 0 (0.0) | 5 (23.8) | 16 (76.2) | 17 | 2 (11.8) | 6 (35.3) | 7 (41.8) | 2 (11.8) |
| Skin changes | 1 (4.8) | 2 (9.5) | 5 (23.8) | 13 (61.9) | 17 | 1 (5.9) | 4 (23.5) | 10 (58.8) | 2 (11.8) |
| Breast growth | 1 (4.8) | 3 (14.3) | 8 (38.1) | 9 (42.8) | 15 | 2 (13.3) | 5 (33.3) | 5 (33.3) | 3 (20.0) |
| Age of menarche | -- | -- | -- | 21 (100.0) | 21 | 0 (0.0) | 6 (28.6) | 13 (61.9) | 2 (9.5) |

| Pubertal Marker | Males n (%) | | | | | | | | |
|---------------------|----------------|----------------|--------------------|-----------|--|---------|---------|-----------|-----------|
| | Not started | Barely Started | Definitely Started | Complete | If complete, how old when started? (n) ^a | | | | |
| | | | | | <9 | 10-11 | 12-13 | 14+ | |
| Growth in height | 3 (9.7) | 9 (29.0) | 11 (35.5) | 8 (25.8) | 21 | 1 (4.8) | 1 (4.8) | 9 (42.9) | 10 (46.6) |
| Growth in body hair | 1 (3.2) | 4 (12.9) | 14 (45.2) | 12 (38.7) | 22 | 2 (9.1) | 2 (9.1) | 10 (45.5) | 8 (36.4) |
| Skin changes | 6 (19.4) | 8 (25.8) | 13 (41.9) | 4 (12.9) | 18 | 1 (5.5) | 0 (0.0) | 3 (16.7) | 14 (77.8) |
| Deepening of voice | 0 (0.0) | 2 (6.5) | 16 (51.6) | 13 (41.9) | 22 | 0 (0.0) | 2 (9.1) | 8 (36.4) | 12 (54.5) |
| Facial hair | 3 (9.7) | 11 (35.5) | 16 (51.6) | 1 (3.2) | 15 | 0 (0.0) | 0 (0.0) | 4 (26.7) | 11 (73.3) |

Note. ^a Scores were based upon when the youth indicated they started development, if one was provided. Percentage based upon those who circled an age of onset for each pubertal marker.

Model 1: Negative Peer Relationships

Descriptive overview of negative peers. The number of criminal friends identified on the MCAA by both males and females is presented in Table 7. Of the total sample, 84.6% of the sample had at least one criminal associate. More specifically, the average number of criminal peers identified by the females was 1.95 ($SD = 1.43$), whereas for the boys, the average number of criminal peers identified was slightly higher at 2.26 ($SD = 1.34$). Nonetheless, this difference was not statistically significant.

Table 7

Number of Criminal Friends and Criminal Friend Index (CFI) by Gender.

| | Number of Criminal Friends | | | | | CFI |
|----------------------|----------------------------|----|----|----|----|---------------|
| | 0 | 1 | 2 | 3 | 4 | <i>M (SD)</i> |
| Males ($n = 31$) | 5 | 3 | 8 | 9 | 6 | 16.84 (14.4) |
| Females ($n = 21$) | 3 | 7 | 4 | 2 | 5 | 13.48 (9.9) |
| Total | 8 | 10 | 12 | 11 | 11 | 15.48 (12.8) |

Research question #1. For the total sample, it appears as though the relationship between early maturation and delinquency may not exist when looking at simply the correlation coefficients. However, it has been argued that just because there is no evidence that X affects Y, does not mean that X cannot affect Y indirectly (Hayes, 2009).

Consequently, guided by theory and prior research, the mediating effect of peers in the relationship between early maturation and delinquency, while controlling for

criminal attitudes and family functioning, was examined using the bootstrapping technique previously discussed. Overall, results indicate that the indirect effect of early maturation on criminal history through delinquent peers was not significant. Specifically, the 95% bias-corrected bootstrap confidence interval based on 10,000 bootstrapped samples for the indirect effect contained zero, indicating non-significance (CI -.07 to .69, point estimate = .18).

Research question #2. Although the indirect effect was not significant, theory and prior research guided the second research question in examining the moderating role of gender in the mediation model tested above. Results indicate that the conditional indirect effect of gender on the relationship between early maturation on criminal history through delinquent peers was not significant. Specifically, the 95% bias-corrected bootstrap confidence interval based on 10,000 bootstrapped samples for the conditional indirect effect contained zero, indicating non-significance for both males (CI -.35 to 2.05, point estimate = .71) and females (CI -.59 to .31, point estimate = -.11).

Research question #3. Given the small sample size, and the limited power associated with breaking down these relationships into categories (i.e., same-sex, opposite-sex, and boyfriend/girlfriends) only a descriptive analysis is provided. The types of relationships identified by the youth within the MCAA is provided in Table 8.

Overall, 56% of the peer relationships identified by females were with negative (i.e., antisocial) peers (i.e., Criminal Friend Index ≥ 1). Of these negative relationships, 50.0% were with opposite sex peers and 50.0% were with same-sex peers. For the male

subsample, 74.0% of their peers were antisocial including 9.3% opposite sex peers and 88.9% same-sex peers (Note: the gender of one peer was not indicated).

Of the relationships identified, 81.0% of the females and 87.1% of the males indicated having a girlfriend or boyfriend. Interestingly, 76.5% of the boyfriends identified by youthful females were antisocial compared to only 37.0% of the males who had relationships with antisocial females. The limited number of acquaintances identified on this scale may be the result of the youth not comprehending the word's meaning. Specifically, only the males indicated having any acquaintances; 6 of the 13 acquaintances identified were classified as antisocial (46.2%).

Table 8

Nature of Negative Relationships Identified by Females and Males

| | Females ($n = 21$) | | |
|---------------------|----------------------|--------|--------------|
| | Boyfriend/Girlfriend | Friend | Acquaintance |
| Total Peers | 17 | 56 | 0 |
| Total Negative | 13 | 31 | 0 |
| <i>Opposite-sex</i> | 13 | 15 | 0 |
| <i>Same-sex</i> | 0 | 16 | 0 |
| | Males ($n = 31$) | | |
| | Boyfriend/Girlfriend | Friend | Acquaintance |
| Total Peers | 27 | 73 | 13 |
| Total Negative | 10 | 54 | 6 |
| <i>Opposite-sex</i> | 10 | 5 | 1 |
| <i>Same-sex</i> | 0 | 48 | 5 |

Note. A negative relationship was determined as such if the friend had a score of 1 or higher on his/her Criminal Friend Index (CFI). In total, the females identified 73 peers/boyfriends and the males identified 113 peers/acquaintances/girlfriends.

Model 2: Positive Peer Relationships

Descriptive overview of positive peers. For the most part, youth in this sample felt that they had positive relationships with their peers as evidenced by a high average score on the Relational Health Indices (RHI) for both females ($M = 45.12$, $SD = 7.07$) and males ($M = 39.48$, $SD = 6.64$) (Note: the highest possible score on this scale is 55).

As mentioned previously, the mean difference in scores was significant, with girls reporting more positive relationships with their peers than their males counterparts, $t(50) = -2.93, p < .01$.

Research question #4. A mediation model was tested to examine whether positive relationships with one's peers can serve to buffer the effects of early maturation on delinquency, while controlling for criminal attitudes and family functioning. As mentioned previously, the relationship between the independent variable and dependent variable may not be evident when examined directly, but a mediating effect could still exist (Hayes, 2009). Overall, results indicate that the buffering effect of positive relationships in the relationship between early maturation and criminal history was not significant. Specifically, the 95% bias-corrected bootstrap confidence interval based on 10,000 bootstrapped samples for the indirect effect contained zero, indicating non-significance (CI -.13 to .76, point estimate = .18).

Research question #5. Despite being unable to show that positive relationships with one's peers can serve to buffer the relationship between early maturation and delinquency, theory suggests that relationships play a more central role in the healthy development of girls. Consequently, to examine if gender moderated this relationship, a moderated mediation analysis was conducted. Results indicate that gender does not moderate the indirect effect of positive peer relationships between early maturation and delinquency. Specifically, the 95% bias-corrected bootstrap confidence interval based on 10,000 bootstrapped samples for the conditional indirect effect contained zero,

indicating non-significance for both males (CI -.11 to 1.08, point estimate = .14) and females (CI -.11 to 1.07, point estimate = .13).

Research question #6. It was hoped to examine the question of whether positive relationships with opposite-sex peers or romantic partners serve to reduce delinquent behaviour (i.e., act as a buffer) to a greater extent than their same-sex peers. However, given the constraints of the data, this research question was not testable. Instead, an overview of the nature of positive relationships reported by these youth is provided in Table 9. As higher scores on the RHI are indicative of a positive relationship, an arbitrary cut-off had to be designated to determine what was a true 'positive relationship'. As there are no guidelines in the relational health literature and the scale can range from 11 to 55 for each individual, a score 44 or higher was deemed a positive relationship for the purposes of classification. This was chosen as a score of 33 would indicate that the individual had circled 'sometimes' for most of the indices on the RHI, where as a score of 44 would indicate they circled 'almost always', or 'always' for each question. Overall, 71.2% of the relationships identified by the females and 45.1% of the relationships identified by the males on the RHI were positive in nature.

Table 9

Nature of Positive Relationships Identified by Females and Males

| | Females (<i>n</i> = 21) | | |
|---------------------|--------------------------|--------|--------------|
| | Boyfriend/Girlfriend | Friend | Acquaintance |
| Total Peers | 17 | 56 | 0 |
| Positive Peers | 13 | 39 | 0 |
| <i>Opposite-sex</i> | 13 | 16 | 0 |
| <i>Same-sex</i> | 0 | 23 | 0 |
| | Males (<i>n</i> = 31) | | |
| | Boyfriend/Girlfriend | Friend | Acquaintance |
| Total Peers | 27 | 73 | 13 |
| Positive Peers | 20 | 28 | 2 |
| <i>Opposite-sex</i> | 20 | 7 | 2 |
| <i>Same-sex</i> | 0 | 21 | 0 |

Note. A positive relationship was determined as such if the friend had a score of 44 or higher on his/her individual RHI score. In total, the females identified 73 peers/boyfriends and the males identified 113 peers/acquaintances/girlfriends.

Supplementary Analysis

Age of peers. As some research has found that older male peers and boyfriends play a larger role in female delinquency than their same sex peers, a descriptive analysis of the age and type of relationships the youth had is provided in Table 10. In terms of age, approximately 71.4% of males and 54.1% of females had similar aged peers (i.e.,

+/- 1 year difference). Interestingly, females had a larger proportion of older opposite-sex peers (52.3%) than their male counterparts (16.1%). In fact, the difference between the number of males and females with at least one older opposite-sex peer was significant, $\chi^2(1, N = 52) = 7.72, p < .05$. Furthermore, although not significantly different, the proportion of females with older boyfriends (47.6%) was moderately larger than the proportion of males with older girlfriends (22.6%), $\chi^2(1, N = 52) = 3.57, p = .08$.

Table 10

Age of Peers by Nature of Relationship

| | Younger Peers | Same-age Peers | Older Peers |
|-----------------------------|---------------|----------------|-------------|
| | % (n) | % (n) | % (n) |
| Females | 8.1% (6) | 54.1% (38) | 39.2% (29) |
| <i>Boyfriend/Girlfriend</i> | 1.4% (1) | 8.1% (6) | 13.5% (10) |
| <i>Same-Sex Peers</i> | 5.4% (4) | 29.7% (22) | 8.1% (6) |
| <i>Opposite-Sex Peers</i> | 2.4% (1) | 13.5% (10) | 17.6% (13) |
| Males | 7.5% (9) | 71.4% (84) | 21.0% (25) |
| <i>Boyfriend/Girlfriend</i> | 2.5% (3) | 14.3% (17) | 5.9% (7) |
| <i>Same-Sex Peers</i> | 3.4% (4) | 42.0% (50) | 10.1% (12) |
| <i>Opposite-Sex Peers</i> | 1.7% (2) | 14.3% (17) | 5.0% (6) |

Note. The 21 females identified the age of 74 peers; the 31 males identified the age of 119 peers. Percentages are based upon the total number of peers identified by each gender. Same-age peers +/- one year.

Direction of criminality. To examine whether antisocial peers resulted in the youth becoming more delinquent themselves, or whether their own delinquent nature facilitated the acquisition of delinquent peers, a measure of relative anti-sociality was examined (see Table 11). Specifically, youth were asked whether they thought they did more or less crime prior to meeting each of their four friends referred to on the MCAA. Only peers who were identified as being antisocial themselves (Criminal Friend Index ≥ 1) are included in this descriptive analysis to examine the proportion of peers who may have had some influence in youthful offender's delinquent behaviour. Overall, most of the youth identified doing 'about the same' amount of crime prior to meeting their peers. Interestingly, the proportion of participants who indicated that they did 'much less crime' than their peers before meeting them appears to be higher for females (27.9%) than for males (12.5%). However, an independent t-test revealed that the mean difference in the amount of crime committed prior to meeting each peer (1 = more crime, 5 = much less) between males ($M = 12.32$) and females ($M = 12.24$) was not significant.

Table 11

Percentage of Youth who Reported Doing More or Less Crime before Meeting Each Friend.

| | More crime % (n) | Somewhat more % (n) | About the same % (n) | Somewhat less % (n) | Much less % (n) |
|---------|------------------------|---------------------------|----------------------------|---------------------------|--------------------|
| Females | 9.3 % (4) | 14.0% (6) | 30.2% (13) | 18.6% (8) | 27.9% (12) |
| Males | 8.3% (6) | 15.3% (11) | 34.7% (25) | 15.3% (11) | 12.5% (9) |
| Total | 8.7% (10) | 14.8% (17) | 33.0% (38) | 16.5% (19) | 29.2% (21) |

Note. Only negative peers were included in this analysis (Criminal Friend Index > 1). The relative criminality of one's peers was identified for 43 relationships by the females and 72 relationships by the males. Percentages are based upon these numbers.

Positive relationships with criminal associates. Despite the non-significance of the relationship between early maturation and delinquency through positive peer relationships, it was expected if these positive relationships were with antisocial peers, the mediating effect would be reduced. Consequently, whether the youth's positive relationships were with antisocial others (i.e., CFI \geq 1) was examined (see Table 12). Overall, females indicated having 73 peer relationships, of which 71.2% were positive in nature. Of these positive relationships, 73.0% of them were with antisocial others. Of the 113 relationships identified by the male subsample, 45.1% ($n = 50$) of them were positive. Of these positive relationships, 50.0% ($n = 25$) of them were with antisocial others.

Table 12

Percentage of Positive Relationships with Antisocial Peers.

| | Total Peers <i>n</i> | Positive Peers % (<i>n</i>) | Positive Relations with Antisocial Peers % (<i>n/total</i>) |
|---------|-------------------------|----------------------------------|---|
| Females | 73 | 71.2% (52) | 73.0% (38/52) |
| Males | 113 | 45.1% (50) | 50.0% (25/50) |

Note. A positive relationship was determined as such if the friend had a score of 44 or higher on his/her individual RHI score. Percentage of positive relations with antisocial peers is the percentage of positive peers that are with antisocial others.

Discussion

The purpose of this study was to examine the relationship between early maturation, positive and negative peer relationships, gender and delinquency. Six primary research questions were examined including: 1) Do negative peer relationships (delinquent vs. non-delinquent) mediate the relationship between early maturation and delinquency? 2) Does gender moderate the mediating effect of negative peers in the relationship between early maturation and delinquency? 3) Does the nature of the relationship (i.e., same-sex, opposite-sex, romantic) increase or decrease the mediated effect of negative peer relations on delinquency? 4) Do positive relationships with one's peers buffer the effect of early maturation on delinquency? 5) Does gender moderate the buffering effect of positive relationships? and 6) Does the nature of the relationship (i.e., same-sex, opposite-sex, romantic) influence the magnitude of the mediation effect of positive peer relations on delinquency?

Early Maturation, Negative Relationships, and Delinquency

Research questions one through three examined the relationship between early maturation, negative peer relationships (i.e., antisocial peers) and delinquency. Results of a mediation analysis found that early maturation was not related to delinquency through the acquisition of delinquent peers for the combined sample. Although the overarching model was non-significant, several other interesting results emerged. Foremost, in line with research examining the *Big Four* predictors of delinquency (Cottle et al., 2001; Hubbard & Pratt, 2002; Simourd & Andrews, 1994), antisocial peers was deemed a strong correlate of delinquency for males ($r = .51, p < .01$) and females ($r = .75, p < .001$). Although just used as a control variable in the present study, antisocial attitudes was also highly correlated to criminal history for both males ($r = .60, p < .01$) and females ($r = .66, p < .01$).

Central to this study, early maturation was not correlated to antisocial peers for either males or females. Furthermore, although prior research has demonstrated a relationship between puberty and delinquency in combined samples of males and females (Beaver & Wright, 2005; Lynne et al., 2007; Negriff et al., 2008) the results did not support this relationship.

There are a couple of possible explanations as to why a significant relationship did not emerge as hypothesized. Foremost, one possible reason for these results could lie in the characteristics of the sample. Moffitt's theory of delinquency suggests there are two distinct types of offenders: life-course-persistent offenders (LCP) and adolescent-limited offenders (ALO). LCP offenders begin exhibiting antisocial

behaviour in early childhood as a result of an interaction between early cognitive deficits and a dysfunctional family or school environment thereby placing the individual at greater risk for a criminal lifestyle (Moffitt, 1993). Alternatively, ALO typically do not begin exhibiting antisocial behaviour until adolescence and their delinquency is attributed to the delay between physical maturation in adolescence and the privileges one attains in adulthood. As the youth's official criminal record was not available for this study, it was not possible to examine whether these youth had a lengthy criminal history prior to pubertal development. Consequently, it is possible that the sample may have been comprised of predominantly early-onset, life-course persistent offenders, a group in which maturation is not as relevant in understanding and explaining their delinquent behaviour.

A second explanation as to why the results did not support the hypothesis could lie in the measurement of early maturation. Overall, the female subsample reported having experienced a larger number of pubertal markers at an earlier age than the male subsample suggesting that girls mature earlier than their male counterparts. However, it was impossible to determine whether differences in this measure was the result of true biological factors (i.e., girls matured earlier than average, whereas the boys did not) or simply differing recollections of when they felt they hit a particular pubertal marker. It could be that puberty is a more memorable experience for girls than for boys. Indeed, studies have shown that age of menarche is a salient event during pubertal development, and can be reliably recalled retrospectively (Koo & Rohan, as cited in Coleman & Coleman, 1997). Although clear markers for boys exist, such as age at first

nocturnal emission (i.e., wet dream; Sanders & Soares, 1986), whether these markers are as memorable to boys is not clear. Furthermore, internal consistency of the Pubertal Development Scale was not as strong for the males ($\alpha = .56$) as it was for the females ($\alpha = .74$), suggesting that maturation may not be reliably measured retrospectively for males.

Further complicating matters is that onset of puberty can be defined differently depending on which pubertal marker is used to gauge early maturation. Specifically, indicators of maturation measured by the Pubertal Development Scale includes growth in height (i.e., growth spurt), skin changes, and growth of body hair, breast development, age of menarche, voice changes and facial hair growth. The average age of onset for each of these markers varies significantly for males and females (for review, see Ahmed, Ong, & Dunger, 2009), thereby decreasing the reliability of this measure when used retrospectively.

Onset of these markers can also differ among diverse ethnic backgrounds (e.g., Sun et al., 2002). Indeed, some of the African American youth in this sample indicated that they had never experienced skin changes or the growth of facial hair. Given the ethnic diversity of the males in the present study, this may account, at least in part, for the gender differences seen in pubertal development within this sample. Lastly, age of onset was only asked if the youth indicated having completed development on a particular marker. Consequently, age of onset was unknown for youth who had indicated that they had *definitely started* or *barely begun*. As a majority of the females indicated having *completed* each marker, and a majority of the males indicated having

definitely started, this may have also contributed to the differences seen in pubertal development within this sample.

As some research has shown that girls are more detrimentally affected by early maturation than are boys (e.g., Flannery et al., 1993; Moffitt et al., 2001) it was hypothesized that the mediating effect of peers would have been stronger for girls than for boys. However, the results failed to support this hypothesis, as the moderated-mediation effect was non-significant; gender did not moderate the link between early maturation and delinquency through the acquisition of delinquent peers, while controlling for antisocial attitudes and family functioning. The types of relationships a youth had may help to explain why this relationship emerged as non-significant.

Although it was not viable to statistically examine the nature of the negative relationships (i.e., same-sex, opposite-sex, romantic) identified by the youth, a descriptive analysis, and a chi-square analysis, suggests that females have more negative relationships with antisocial opposite-sex peers than males. Specifically, 50% of the peers identified by the females on the Measure of Criminal Attitudes and Associates (MCAA) were of the opposite-sex compared to 10% identified by the males as being of the opposite-sex. Furthermore, of the boyfriends identified by the females, 76% were antisocial compared to 37% of the girlfriends identified by the males. Although firm conclusions cannot be drawn based solely on these distributions, results suggest that negative relationships with opposite-sex peers and boyfriends are more important in female delinquency and that negative same-sex peers are more important in explaining male delinquency. These results are in line with previous research that has

shown that the deviancy of male peers exerts more of an influence on female delinquency than do their same-sex peers (Agnew & Brezina, 1997; Caspi et al., 1993; Giordano, 1978; Haynie et al., 2007, Warr, 1996) and that romantic partners may play an important role in female delinquent behaviour (e.g., Benda, 2005; Halpern et al., 2007). Furthermore, 90% of the males' antisocial associates were of the same-sex, in line with research that has shown that the majority of male crime is committed in the presence of male peers (Warr, 1996).

Early Maturation, Positive Relationships, and Delinquency

Although previous research suggests that positive peer relationships may serve as a protective factor for youthful offenders (Hoge et al., 1996), others have found that adolescents who report positive relations with their peers are *more* rather than *less* delinquent (Agnew & Brezina, 1997). Therefore, a goal of this study was to clarify whether positive relationships are protective in nature (at least for those with non-delinquent peers) or whether they carry with them the same risks as negative peer relationships for both girls and boys. Although both males and females rated their relationships quite positively, females scored significantly higher on the Relational Health Indices indicating that overall, females had more positive relationships with their peers than the males. This is in line with feminist theories, such as RCT, that stress the importance of healthy, mutually fulfilling relationships for women and girls (Miller, 1986b; 1988).

However, results of a mediation analysis indicate that positive peer relationships do not mediate the relationship between early maturation and delinquency. There are

several possible reasons as to why this relationship did not emerge as hypothesized. Although both males and female generally reported positive relationships with their peers, 50% of the males and 72% of the females had positive relationships with antisocial others. Therefore, the high prevalence of relationships with antisocial peers may have diminished any effect of positive relationships that may have been present. Furthermore, positive relationships were defined with the context of RCT and included three aspects of relational quality: authenticity, engagement, and empowerment/zest. However, how youth define the “quality of a relationship” may be markedly different for females and males. It is possible behavioural indices (e.g., My friend comes to visit me), rather than emotional indices (e.g., I feel positively changed by person #1) would result in a more valid assessment of positive relationships for males. Anecdotal observations of the youthful males also revealed that many of them thought the questions on the Relational Health Indices to “be lame”, or “gay”, suggesting that males assess relationship quality differently than females.

Relational cultural theory posits that relationships are central to the well being of females (Miller, 1988). Therefore, it was expected that positive relationships would have a larger effect in reducing delinquency for girls than for boys. That is to say if a girl has fulfilling relationships with others, it is less likely that she would commit acts of deviancy in order to maintain a failing relationship. However, results of the moderated-mediation analysis indicate that gender does not moderate the relationship between early maturation and delinquency through positive relationships. Again, these results are likely plagued by some of the same measurement issues presented

previously (i.e., unreliability of the PDS, sample demographics, positive relationships with antisocial others, validity of RCT for male subsample).

Although the results of this study were unable to ascertain the degree to which positive relationships minimize the delinquent behaviour of antisocial youth, a large proportion of the participants in the present study had positive relationships with antisocial peers. Consequently, future research should consider the use of a community-based sample to examine the differential effects of positive pro-social relationships and positive anti-social relationships.

Supplementary Analysis Results

Although delinquent peers is a prominent risk factor for delinquency for both males and females (Cottle et al., 2001; Hubbard & Pratt, 2002; Simourd & Andrews, 1994), given the cross-sectional nature of the design, it was difficult to ascertain whether the delinquency of the youth was a cause or a consequence of their relationships with their peers. Although, most of the youth identified doing 'about the same' amount of crime prior to meeting their peers, the proportion of participants who indicated that they did 'somewhat less' or 'much less crime' than their peers before meeting them appears to be higher for females ($n = 20$; 46.5%) than for males ($n = 20$; 27.8%). Although the small sample precludes the ability to make substantial conclusions, these results do suggest that the delinquency of females may be the result of their associations with peers. In contrast, for males, the relationship between their own delinquency and the delinquency of their male associates may be more bi-directional.

Overall, the majority of both males (71.4%) and females (54.1%) had similar aged peers. However, females had a larger proportion of older opposite-sex peers (17.6%) and older boyfriends (13.5%) than their male counterparts (5.0% and 5.9% respectively) This is in line with previous research that has found that male peers, particularly older male romantic partners, are to blame for girls' delinquency in adolescence (Halpern et al., 2007).

Results of this study indicate that the Measure of Criminal Attitude and Associates (MCAA) is a reliable and valid instrument for use with adolescent offenders. This is important as this is one of the first studies to examine the utility of the MCAA for use with adolescent offenders. Furthermore, as mentioned previously both the attitudes and associates domains were highly correlated with delinquency for both males and females. Although this supports the general consensus made in the gender-neutral literature (e.g., Andrews & Bonta, 2006; Cottle et al., 2001; Green & Campbell, 2006; Hubbard & Pratt, 2002; Simourd & Andrews, 1994), these results are counter to some qualitative (e.g., Heimer 1996) and quantitative (e.g., Salisbury 2008) evidence suggesting criminal attitudes may not be a major risk factor for female offenders. Furthermore, although gender-neutral theorists argue that antisocial peers are a risk factor equally relevant for males and females, a post hoc analysis found gender to moderate the relationship between delinquent peers and delinquency. This is in line with relational cultural theory that suggests that relationships are central in the healthy development of women and that disruptions or conflict in relationships affect females

to a greater degree than males who are more likely to be interested in pursuing autonomy rather than forming meaningful relationships with others (Miller, 1986).

By and large, these results suggest that an integrated approach, as advocated by Blanchette and Brown (2006), needs to be adopted when trying to understand female delinquency. Specifically, what has been classified as ‘gender-neutral’ and ‘gender-specific’ theories may indeed complement one another (Blanchette & Brown, 2006; Hubbard & Matthews, 2008). While the Risk-Needs-Responsivity model (RNR; Andrews & Bonta, 2006) has done much of the groundwork, the contributions of feminist theories, such as relational-cultural theory (RCT; Miller, 1986), can add to our understanding of the criminal behaviour of girls and women.

Limitations

Although a longitudinal design is best suited for analyzing causal pathways such as the one between early maturation, developing delinquent peers, and committing deviant acts, the present study utilized a retrospective, cross-sectional design. As a result, causal inferences among these variables, or the direction of the relationship, if one was to have emerged, cannot be discerned. Furthermore, given that most studies that have examined the effects of early maturation have used comparatively younger samples, maturation would have been more proximal to the outcome measure, be it substance abuse (e.g., Stice, Presnell, & Bearman, 2001), sexual experiences (e.g., Flannery et al., 1993) or delinquency (e.g., Williams & Dunlop, 1999). However, in this study a number of other factors may have influenced this relationship in the five or six

years that had passed since commencing puberty; therefore, other factors not controlled for in this study may have clouded the effect of early maturation on delinquency.

This study also did not use a community-based sample. This would have provided a wider range of delinquent involvement allowing comparisons to be made with youth who are more law-abiding. Additionally, this would have allowed a comparison of pubertal onset between girls in custody relative to girls in the community. Specifically, as girls in the present study scored significantly higher than the boys, if a community sample (comparatively similar in age) demonstrated no real gender differences in onset of pubertal markers, then this may have provided some indirect evidence that early puberty affects girls to a greater degree than boys. Lastly, although the females were recruited from all three sites (i.e., closed custody, open custody, and community attendance center), the males were all recruited from the closed custody facility resulting in some disparity between subsamples in terms of their overall risk level.

On another note, it would have been beneficial to account for socially desirable responding of the youth. Although the participants were given the option of filling out their questionnaire with the researcher's assistance, most chose to do so independently. However, given the space limitations of the facilities, many of the youth filled out their questionnaires in the presence of others (i.e., groups of 3 to 5). Despite our best efforts to keep the youth's attention on their own work, several of the youth felt that certain things were worth sharing with the others in a bid to attract attention (e.g., How many crimes have you committed without getting caught...one youth disclosed to the others

“like a 1000!”). Although filling out the questionnaires with the youth one-on-one would have obviated this problem, the time necessary to do so was not feasible.

There were also several issues with the measures themselves that should be taken into account for future research. Foremost, there were several measures that were simply too long for an adolescent’s attention span including the MCAA attitude component, and the combined measure of positive and negative relationships (i.e., MCAA peer component and the Relational Health Indices). Although these measures were counterbalanced to account for a fatigue effect, the integrity of the youth’s answers likely diminished as they neared the end. This was particularly noticeable with the male participants; in contrast, the females appeared to put extra effort in to making sure they understood and answered each question. Furthermore, few studies have utilized retrospective measures of maturation (e.g., Kaiser & Gruzelier, 1999), and although these measures had acceptable reliability, it is questionable as to whether retrospective measures are equally valid for males and females. Lastly, the small sample size limited the ability to test two of the research questions and the ability to generalize to the population as a whole.

Conclusion

Overall, results indicated that neither negative relationships nor positive relationships mediated the relationship between early maturation and delinquency for males or females. Although few conclusions were drawn from this study as to the role of early maturation in delinquency, antisocial peers were found to be a stronger correlate of delinquency for females than for males. Furthermore, it is important that

future research continues to investigate the types of peers acquired by females as results from this study suggest that male peers, particularly older male peers, may play a larger role in female delinquency than their same sex peers. Should future research be successful in linking a early maturation to the acquisition of these older male peers, appropriate interventions could be put in place to address the influence these peers have on early maturing girls.

Feminist scholars have argued for the creation of programs grounded in gender informed theories such as relational cultural theory (e.g., Bloom et al., 2003). However, this study found that two gender-neutral risk factors (i.e., attitudes and peers) were related to delinquency for both males and females. Nonetheless, in line with RCT, peers were more highly correlated with delinquency for females than for males suggesting that an integrated approach (see Blanchette & Brown, 2006) incorporating elements from both feminist and gender-neutral perspectives of criminal conduct would be more useful in explaining female delinquency.

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Appendix A

Demographic Questionnaire

ID number _____

Please complete the following information:

| | |
|--|------------|
| Gender: <input type="checkbox"/> male <input type="checkbox"/> female | |
| Date of Birth: _____ (day, month, year) | Age: _____ |
| Ethnicity: <input type="checkbox"/> Aboriginal <input type="checkbox"/> African American <input type="checkbox"/> Asian <input type="checkbox"/> Caucasian <input type="checkbox"/> East Indian <input type="checkbox"/> Hispanic <input type="checkbox"/> Other: _____ | |

Some of the following questions are answered by circling *either* "YES" or "NO". If you are undecided or unsure over a specific question, answer it as best as you can and put a question mark "?" next to it. Some questions ask you "*how many times*" you did something. These questions are followed by a "#: _____" box. The symbol "#", means *number*. The question is asking you to fill in that number.

Read each question very carefully and answer the questions truthfully.

| | | |
|--|--------------|----|
| 1. Were you raised by your natural parents? | Yes | No |
| 2. Are your parents divorced? | Yes | No |
| 3. How many grades did you fail or have to repeat? | #: _____ | |
| 4. What grade level have you completed? | Grade: _____ | |
| 5. If you are no longer living at home, at what age did you leave? | Age: _____ | |

Appendix B

Pubertal Development Scale
(Petersen, Crockett, Richards, & Boxer, 1988)

We know that the following questions might be difficult but we would appreciate you answering them as well as you can.

| | |
|------------------------------|--|
| How tall are you? | I am _____ feet and _____ inches tall. |
| About how much do you weigh? | _____ lbs _____ kg |

To answer each question, please put an X in the box in front of the answer that best describes what is happening to you. Please choose only ONE answer for each question.

1. Would you say your growth in height: [Mark one box]

- has not yet begun to spurt or grow really fast.
- has barely started.
- has definitely started.
- seems completed.
 - If complete, how old were you when you feel you started growing (circle one)?
 - ≤ 9
 - 10-11
 - 12-13
 - 14+

2. And how about the growth of body hair?
("Body hair" means hair any place other than your head, such as under your arms)

Would you say that your body hair has: [Mark one box]

- not yet begun to grow.
- has barely started to grow.
- is definitely underway.
- seems completed.
 - If complete, how old were you when your body hair started growing (circle one)?
 - ≤ 9
 - 10-11
 - 12-13
 - 14+

3. Have you noticed any skin changes, especially pimples? [Mark one box]

- skin has not started changing.
- skin has barely started changing.
- skin changes are definitely underway.
- skin changes seem complete.
 - If complete, how old were you when your skin changes began (circle one)?
 - ≤ 9
 - 10-11
 - 12-13
 - 14+

FOR BOYS ONLY: Questions 4 & 5

4. Have you noticed a deepening of your voice? [Mark one box]

- not yet started changing
- has barely started showing any changes
- voice change is definitely underway
- voice change seems completed.
 - How old were you when you felt your voice change started (circle one)?
 - ≤ 9
 - 10-11
 - 12-13
 - 14+

5. Have you begun to grow hair on your face? [Mark one box]

- not yet started growing hair
- has barely started growing hair
- facial hair growth is definitely underway
- facial hair growth seems completed
 - How old were you when your facial hair growth started (circle one)?
 - ≤ 9
 - 10-11
 - 12-13
 - 14+

FOR GIRLS ONLY: Question 4 through 6.

4. Have you noticed that your breasts have begun to grow? [Mark one box]

- have not yet started growing.
- have barely started growing.
- breast growth is definitely underway.
- breast growth seems complete.
 - If complete, how old were you when your breasts began to grow (circle one)?
 - ≤ 9
 - 10-11
 - 12-13
 - 14+

5. Have you begun to menstruate (started to have your period)?

- No (skip to question 7)
- Yes

6. If yes, how old were you when you first started to menstruate (get your period) (Circle One Answer)?

- ≤ 9
- 10-11
- 12-13
- 14+

Appendix C

Negative Relationships: Measure of Criminal Attitudes and Associates
(MCAA; Mills, Kroner, & Forth, 2002)
&
Positive Relationships: Relational Health Indices
(Liang et al., 2002)

This questionnaire has two parts (Part A and Part B). The first part asks some questions about your friends, girlfriends/boyfriends (e.g., someone you truly care about and may be physically intimate with—holding hands, kissing etc) and acquaintances. The second part is a series of statements for which you can respond by showing whether you agree or disagree with the statement. There are no right or wrong answers. Please answer all the questions to the best of your ability.

Part A

Think about the **4 people** you spend the most time within the community when you answer Part A. If you had/have a boyfriend or girlfriend in the community please make sure that this person is included as one of these four people. Please do not provide any names of the people you are referring to. Now answer the questions to the best of your knowledge.

Person #1

A. How much of your free time do you spend with person #1? (Please circle your answer)

less than 25% *25% - 50%* *50% - 75%* *75% - 100%*

B. How old is person #1? (Please circle your answer)

≤12 *13* *14* *15* *16* *17* *18* *19-25* *26-30* *31+*

C. Do you think you did more or less crime before you met person #1? (Please circle your answer)

More crime *somewhat more* *about the same* *somewhat less* *much less*

D. Person #1 is: (Please circle your answer)

My friend *my acquaintance* *my girlfriend/boyfriend*

E. Has person #1 ever committed a crime? Yes No

F. Does person #1 have a criminal record? Yes No

G. Has person #1 ever been to jail? Yes No

- H. Has person #1 tried to involve you in a crime? Yes No
 I. Is person #1 male? Yes No
 J. Is person #1 female? Yes No

| | | | | | |
|---|---|---|---|---|---|
| K. Even when I have difficult things to share, I can be honest and real with person #1. | 1 | 2 | 3 | 4 | 5 |
| L. After a conversation with person #1, I feel uplifted. | 1 | 2 | 3 | 4 | 5 |
| M. The more time I spend with person #1, the closer I feel to him/her. | 1 | 2 | 3 | 4 | 5 |
| N. I feel understood by person #1. | 1 | 2 | 3 | 4 | 5 |
| O. It is important to us (person #1 and I) to make our friendship grow. | 1 | 2 | 3 | 4 | 5 |
| P. I can talk to person #1 about our disagreements without feeling judged. | 1 | 2 | 3 | 4 | 5 |
| Q. My friendship/relationship (with person #1) inspires me to seek other friendships like this one or to strengthen my existing relationship. | 1 | 2 | 3 | 4 | 5 |
| R. I am uncomfortable sharing my deepest feelings and thoughts with person #1. | 1 | 2 | 3 | 4 | 5 |
| S. I have a greater sense of self-worth through my friendship/relationship with person #1. | 1 | 2 | 3 | 4 | 5 |
| T. I feel positively changed by person #1. | 1 | 2 | 3 | 4 | 5 |
| U. I can tell person #1 when he/she has hurt my feelings. | 1 | 2 | 3 | 4 | 5 |

Person #2

A. How much of your free time do you spend with person #2? (Please circle your answer)

less than 25% *25% - 50%* *50% - 75%* *75% - 100%*

B. How old is person #2? (Please circle your answer)

≤12 *13* *14* *15* *16* *17* *18* *19-25* *26-30* *31+*

C. Do you think you did more or less crime before you met person #2? (Please circle your answer)

More crime *somewhat more* *about the same* *somewhat less* *much less*

D. Person #2 is: (Please circle your answer)

My friend *my acquaintance* *my girlfriend/boyfriend*

E. Has person #2 ever committed a crime? Yes No

F. Does person #2 have a criminal record? Yes No

- G. Has person #2 ever been to jail? Yes No
 H. Has person #2 tried to involve you in a crime? Yes No
 I. Is person #2 male? Yes No
 J. Is person #2 female? Yes No

| | | | | | |
|---|---|---|---|---|---|
| K. Even when I have difficult things to share, I can be honest and real with person #2. | 1 | 2 | 3 | 4 | 5 |
| L. After a conversation with person #2, I feel uplifted. | 1 | 2 | 3 | 4 | 5 |
| M. The more time I spend with person #2, the closer I feel to him/her. | 1 | 2 | 3 | 4 | 5 |
| N. I feel understood by person #2. | 1 | 2 | 3 | 4 | 5 |
| O. It is important to us (person #2 and I) to make our friendship grow. | 1 | 2 | 3 | 4 | 5 |
| P. I can talk to person #2 about our disagreements without feeling judged. | 1 | 2 | 3 | 4 | 5 |
| Q. My friendship/relationship (with person #2) inspires me to seek other friendships like this one or to strengthen my existing relationship. | 1 | 2 | 3 | 4 | 5 |
| R. I am uncomfortable sharing my deepest feelings and thoughts with person #2. | 1 | 2 | 3 | 4 | 5 |
| S. I have a greater sense of self-worth through my friendship/relationship with person #2. | 1 | 2 | 3 | 4 | 5 |
| T. I feel positively changed by person #2. | 1 | 2 | 3 | 4 | 5 |
| U. I can tell person #2 when he/she has hurt my feelings. | 1 | 2 | 3 | 4 | 5 |

Person #3

3.A. How much of your free time do you spend with person #3? (Please circle your answer)

less than 25% *25% - 50%* *50% - 75%* *75% - 100%*

B. How old is person #3? (Please circle your answer)

≤12 *13* *14* *15* *16* *17* *18* *19-25* *26-30* *31+*

C. Do you think you did more or less crime before you met person #3? (Please circle your answer)

More crime *somewhat more* *about the same* *somewhat less* *much less*

D. Person #3 is: (Please circle your answer)

My friend *my acquaintance* *my girlfriend/boyfriend*

E. Has person #3 ever committed a crime? Yes No

- F. Does person #3 have a criminal record? Yes No
- G. Has person #3 ever been to jail? Yes No
- H. Has person #3 tried to involve you in a crime? Yes No
- I. Is person #3 male? Yes No
- J. Is person #3 female? Yes No

| | | | | | |
|---|---|---|---|---|---|
| K. Even when I have difficult things to share, I can be honest and real with person #3. | 1 | 2 | 3 | 4 | 5 |
| L. After a conversation with person #3, I feel uplifted. | 1 | 2 | 3 | 4 | 5 |
| M. The more time I spend with person #3, the closer I feel to him/her. | 1 | 2 | 3 | 4 | 5 |
| N. I feel understood by person #3 | 1 | 2 | 3 | 4 | 5 |
| O. It is important to us (person #3 and I) to make our friendship grow. | 1 | 2 | 3 | 4 | 5 |
| P. I can talk to person #3 about our disagreements without feeling judged. | 1 | 2 | 3 | 4 | 5 |
| Q. My friendship/relationship (with person #3) inspires me to seek other friendships like this one or to strengthen my existing relationship. | 1 | 2 | 3 | 4 | 5 |
| R. I am uncomfortable sharing my deepest feelings and thoughts with person #3. | 1 | 2 | 3 | 4 | 5 |
| S. I have a greater sense of self-worth through my friendship/relationship with person #3. | 1 | 2 | 3 | 4 | 5 |
| T. I feel positively changed by person #3. | 1 | 2 | 3 | 4 | 5 |
| U. I can tell person #3 when he/she has hurt my feelings. | 1 | 2 | 3 | 4 | 5 |

Person #4

4.A. How much of your free time do you spend with person #4? (Please Circle Your Answer)

less than 25% *25% - 50%* *50% - 75%* *75% - 100%*

B. How old is person #4? (Please circle your answer)

≤12 *13* *14* *15* *16* *17* *18* *19-25* *26-30* *31+*

C. Do you think you did more or less crime before you met person #4? (Please circle your answer)

More crime *somewhat more* *about the same* *somewhat less* *much less*

D. Person #4 is: (Please circle your answer)

My friend *my acquaintance* *my girlfriend/boyfriend*

- E. Has person #4 ever committed a crime? Yes No
- F. Does person #4 have a criminal record? Yes No
- G. Has person #4 ever been to jail? Yes No
- H. Has person #4 tried to involve you in a crime? Yes No
- I. Is person #4 male? Yes No
- J. Is person #4 female? Yes No

| | | | | | |
|---|---|---|---|---|---|
| K. Even when I have difficult things to share, I can be honest and real with person #4. | 1 | 2 | 3 | 4 | 5 |
| L. After a conversation with person #4, I feel uplifted. | 1 | 2 | 3 | 4 | 5 |
| M. The more time I spend with person #4, the closer I feel to him/her. | 1 | 2 | 3 | 4 | 5 |
| N. I feel understood by person #4. | 1 | 2 | 3 | 4 | 5 |
| O. It is important to us (person #4 and I) to make our friendship grow. | 1 | 2 | 3 | 4 | 5 |
| P. I can talk to person #4 about our disagreements without feeling judged. | 1 | 2 | 3 | 4 | 5 |
| Q. My friendship/relationship (with person #4) inspires me to seek other friendships like this one or to strengthen my existing relationship. | 1 | 2 | 3 | 4 | 5 |
| R. I am uncomfortable sharing my deepest feelings and thoughts with person #4. | 1 | 2 | 3 | 4 | 5 |
| S. I have a greater sense of self-worth through my friendship/relationship with person #4. | 1 | 2 | 3 | 4 | 5 |
| T. I feel positively changed by person #4. | 1 | 2 | 3 | 4 | 5 |
| U. I can tell person #4 when he/she has hurt my feelings. | 1 | 2 | 3 | 4 | 5 |

Appendix D

Measure of Criminal Attitudes and Associates- Criminal Attitudes Subtotal
(MCAA; Mills, Kroner, & Forth, 2002)

Part B

Please answer all the questions.

A = Agree D = Disagree (Circle One Answer)

- A D 1. It's understandable to hit someone who insults you.
- A D 2. Stealing to survive is understandable.
- A D 3. I am not likely to commit a crime in the future.
- A D 4. I have a lot in common with people who break the law.
- A D 5. There is nothing wrong with beating up a child molester.
- A D 6. A person is right to take what is owed them, even if they have to steal it.
- A D 7. I would keep any amount of money I found.
- A D 8. None of my friends have committed crimes.
- A D 9. Sometimes you have to fight to keep your self-respect.
- A D 10. I should be allowed to decide what is right and wrong.
- A D 11. I could see myself lying to the police.
- A D 12. I know several people who have committed crimes.
- A D 13. Someone who makes you very angry deserves to be hit.
- A D 14. Only I should decide what I deserve.
- A D 15. In certain situations I would try to outrun the police.
- A D 16. I would not steal, and I would hold it against anyone who does.
- A D 17. People who get beat up usually had it coming.
- A D 18. I should be treated like anyone else no matter what I've done.
- A D 19. I would be open to cheating certain people.
- A D 20. I always feel welcomed around criminal friends.

- A D 21. It's all right to fight someone if they stole from you.
- A D 22. It's wrong for a lack of money to stop you from getting things.
- A D 23. I could easily tell a convincing lie.
- A D 24. Most of my friends don't have criminal records.
- A D 25. It's not wrong to hit someone who puts you down.
- A D 26. A hungry man has the right to steal.
- A D 27. Rules will not stop me from doing what I want.
- A D 28. I have friends who have been to jail.
- A D 29. Child molesters get what they have coming.
- A D 30. Taking what is owed you is not really stealing.
- A D 31. I would not enjoy getting away with something wrong.
- A D 32. None of my friends has ever wanted to commit a crime.
- A D 33. It's not wrong to fight to save face.
- A D 34. Only I can decide what is right and wrong.
- A D 35. I would run a scam if I could get away with it.
- A D 36. I have committed a crime with friends.
- A D 37. Someone who makes you really angry shouldn't complain if they get hit.
- A D 38. A person should decide what they deserve out of life.
- A D 39. For a good reason, I would commit a crime.
- A D 40. I have friends who are well known to the police.
- A D 41. There is nothing wrong with beating up someone who asks for it.
- A D 42. No matter what I've done, it's only right to treat me like everyone else.
- A D 43. I will not break the law again.
- A D 44. It is reasonable to fight someone who cheated you.
- A D 45. A lack of money should not stop you from getting what you want.
- A D 46. I would be happy to fool the police.

Appendix E

Family Adaptability and Cohesion Evaluation Scale II (FACES II; Olsen, Portner, & Bell, 1982)

Please rate the following statements about your family on this scale.
Circle the appropriate response.

1. Family members are supportive of each other during difficult times

Almost never *Once in a while* *Sometimes* *Frequently* *Almost always*

2. In our family it is easy for everyone to express his/her feelings

Almost never *Once in a while* *Sometimes* *Frequently* *Almost always*

3. It is easier to discuss problems with people outside the family than with other family members

Almost never *Once in a while* *Sometimes* *Frequently* *Almost always*

4. Each family member has input into major family discussions

Almost never *Once in a while* *Sometimes* *Frequently* *Almost always*

5. Our family gathers together in the same room

Almost never *Once in a while* *Sometimes* *Frequently* *Almost always*

6. Children have a say in their discipline

Almost never *Once in a while* *Sometimes* *Frequently* *Almost always*

7. Our family does things together

Almost never *Once in a while* *Sometimes* *Frequently* *Almost always*

8. Family members discuss problems and feel good about solutions

Almost never *Once in a while* *Sometimes* *Frequently* *Almost always*

9. In our family, everyone goes his/her own way

Almost never *Once in a while* *Sometimes* *Frequently* *Almost always*

10. We shift household responsibilities from person to person

Almost never *Once in a while* *Sometimes* *Frequently* *Almost always*

11. Family members know each other's close friends

Almost never *Once in a while* *Sometimes* *Frequently* *Almost always*

12. It is hard to know what the rules are in our family

| | | | | |
|---------------------|------------------------|------------------|-------------------|----------------------|
| <i>Almost never</i> | <i>Once in a while</i> | <i>Sometimes</i> | <i>Frequently</i> | <i>Almost always</i> |
|---------------------|------------------------|------------------|-------------------|----------------------|

13. Family members consult other family members on their decisions

| | | | | |
|---------------------|------------------------|------------------|-------------------|----------------------|
| <i>Almost never</i> | <i>Once in a while</i> | <i>Sometimes</i> | <i>Frequently</i> | <i>Almost always</i> |
|---------------------|------------------------|------------------|-------------------|----------------------|

14. Family members say what they want

| | | | | |
|---------------------|------------------------|------------------|-------------------|----------------------|
| <i>Almost never</i> | <i>Once in a while</i> | <i>Sometimes</i> | <i>Frequently</i> | <i>Almost always</i> |
|---------------------|------------------------|------------------|-------------------|----------------------|

15. We have difficulty thinking of things to do as a family

| | | | | |
|---------------------|------------------------|------------------|-------------------|----------------------|
| <i>Almost never</i> | <i>Once in a while</i> | <i>Sometimes</i> | <i>Frequently</i> | <i>Almost always</i> |
|---------------------|------------------------|------------------|-------------------|----------------------|

16. In solving problems, the children's suggestions are followed

| | | | | |
|---------------------|------------------------|------------------|-------------------|----------------------|
| <i>Almost never</i> | <i>Once in a while</i> | <i>Sometimes</i> | <i>Frequently</i> | <i>Almost always</i> |
|---------------------|------------------------|------------------|-------------------|----------------------|

17. Family members feel close to each other

| | | | | |
|---------------------|------------------------|------------------|-------------------|----------------------|
| <i>Almost never</i> | <i>Once in a while</i> | <i>Sometimes</i> | <i>Frequently</i> | <i>Almost always</i> |
|---------------------|------------------------|------------------|-------------------|----------------------|

18. Discipline is fair in our family

| | | | | |
|---------------------|------------------------|------------------|-------------------|----------------------|
| <i>Almost never</i> | <i>Once in a while</i> | <i>Sometimes</i> | <i>Frequently</i> | <i>Almost always</i> |
|---------------------|------------------------|------------------|-------------------|----------------------|

19. Family members feel closer to people outside the family than to other family members

| | | | | |
|---------------------|------------------------|------------------|-------------------|----------------------|
| <i>Almost never</i> | <i>Once in a while</i> | <i>Sometimes</i> | <i>Frequently</i> | <i>Almost always</i> |
|---------------------|------------------------|------------------|-------------------|----------------------|

20. Our family tries new ways of dealing with problems

| | | | | |
|---------------------|------------------------|------------------|-------------------|----------------------|
| <i>Almost never</i> | <i>Once in a while</i> | <i>Sometimes</i> | <i>Frequently</i> | <i>Almost always</i> |
|---------------------|------------------------|------------------|-------------------|----------------------|

21. Family members go along with what the family decides to do

| | | | | |
|---------------------|------------------------|------------------|-------------------|----------------------|
| <i>Almost never</i> | <i>Once in a while</i> | <i>Sometimes</i> | <i>Frequently</i> | <i>Almost always</i> |
|---------------------|------------------------|------------------|-------------------|----------------------|

22. In our family, everyone shares responsibility

| | | | | |
|---------------------|------------------------|------------------|-------------------|----------------------|
| <i>Almost never</i> | <i>Once in a while</i> | <i>Sometimes</i> | <i>Frequently</i> | <i>Almost always</i> |
|---------------------|------------------------|------------------|-------------------|----------------------|

23. Family members like to spend their free time with one another

| | | | | |
|---------------------|------------------------|------------------|-------------------|----------------------|
| <i>Almost never</i> | <i>Once in a while</i> | <i>Sometimes</i> | <i>Frequently</i> | <i>Almost always</i> |
|---------------------|------------------------|------------------|-------------------|----------------------|

24. It is difficult to get a rule changed in our family

| | | | | |
|---------------------|------------------------|------------------|-------------------|----------------------|
| <i>Almost never</i> | <i>Once in a while</i> | <i>Sometimes</i> | <i>Frequently</i> | <i>Almost always</i> |
|---------------------|------------------------|------------------|-------------------|----------------------|

25. Family members avoid each other at home

| | | | | |
|---------------------|------------------------|------------------|-------------------|----------------------|
| <i>Almost never</i> | <i>Once in a while</i> | <i>Sometimes</i> | <i>Frequently</i> | <i>Almost always</i> |
|---------------------|------------------------|------------------|-------------------|----------------------|

26. When problems arise, we compromise

| | | | | |
|---------------------|------------------------|------------------|-------------------|----------------------|
| <i>Almost never</i> | <i>Once in a while</i> | <i>Sometimes</i> | <i>Frequently</i> | <i>Almost always</i> |
|---------------------|------------------------|------------------|-------------------|----------------------|

27. We approve of each other's friends

| | | | | |
|---------------------|------------------------|------------------|-------------------|----------------------|
| <i>Almost never</i> | <i>Once in a while</i> | <i>Sometimes</i> | <i>Frequently</i> | <i>Almost always</i> |
|---------------------|------------------------|------------------|-------------------|----------------------|

28. Family members are afraid to say what is on their mind

| | | | | |
|---------------------|------------------------|------------------|-------------------|----------------------|
| <i>Almost never</i> | <i>Once in a while</i> | <i>Sometimes</i> | <i>Frequently</i> | <i>Almost always</i> |
|---------------------|------------------------|------------------|-------------------|----------------------|

29. Family members pair up rather than do things as a total family

| | | | | |
|---------------------|------------------------|------------------|-------------------|----------------------|
| <i>Almost never</i> | <i>Once in a while</i> | <i>Sometimes</i> | <i>Frequently</i> | <i>Almost always</i> |
|---------------------|------------------------|------------------|-------------------|----------------------|

30. Family members share interests and hobbies with each other

| | | | | |
|---------------------|------------------------|------------------|-------------------|----------------------|
| <i>Almost never</i> | <i>Once in a while</i> | <i>Sometimes</i> | <i>Frequently</i> | <i>Almost always</i> |
|---------------------|------------------------|------------------|-------------------|----------------------|

Appendix F

Youth Level of Service/Case Management Inventory
(YLS/CMI)- Criminal History Subcomponent
(Hoge, Andrews, Leschied, 2002)

For the following questions, please circle yes or no.

1. Have you been convicted of three or more previous offences? Yes / No
2. Have you received two or more charges of failure to comply? Yes / No
3. Have you ever served probation prior to the current offence? Yes / No
4. Have you ever been in custody prior to the current offence? Yes / No
5. Did you receive three or more convictions for your current sentence? Yes / No

Appendix G

Youth Self-Report History Questionnaire
(YSRHQ; Rowe, 2008)

These next questions ask you "*how many times*" you did something. These questions are followed by a "#: _____" box. The symbol "#", means *number*. The question is asking you to fill in that number. Often it is hard to remember exactly how often we did things. If you do not know the exact number write down your best guess, an estimate. If you have never done that thing, or it has never happened, just write a zero "0" after the "#:". Again, please make sure to only write in a number and not phrases like "frequently" or "lots of times".

Read each question very carefully and answer the questions truthfully.

1. As a child (under 12), how many times did you get stoned (use drugs)? #: _____
2. As a child (under 12), how many times did you steal things (shoplifted)? #: _____
3. As a child (under 12), how many times did you fight (physically)? #: _____
4. As a child (under 12), how many times did you break other people's belongings?
#: _____
5. As a child (under 12), how many times were you in trouble with the police? #: _____
6. How many times were you expelled from a school? #: _____
7. How many times were you suspended from a school? #: _____
8. How many days of school did you fail to attend (skip) in high school? #: _____
9. How many crimes have you committed without getting caught? #: _____
10. How many times have you been on probation? #: _____
11. How many times have you failed on probation? #: _____
12. How many times have you been unlawfully at large (UAL) or taken off from custody
or a placement home? #: _____
13. How many times have you been charged with failure to appear? #: _____
14. How many times have you been charged with a breach of probation or bail
conditions? # _____
15. How many times have you driven a car when you were too drunk to drive? # _____
16. How many times have you sold drugs for money? # _____

17. How many times have you been involved in a physical fight in custody? #: _____
18. How many times have you fought (physically) with a girlfriend/boyfriend? #: _____
19. How many times have you seriously hurt someone in a physical fight? #: _____
20. How many times have you used a weapon on someone? #: _____
21. How much time have you had to be restrained by police or a staff member of a home? #: _____
22. How many times have you assaulted a teacher? #: _____

Appendix H

Recruitment Notice

Recruitment Notice

Research Study: Relationships and Delinquency: Does early maturation matter?

The purpose of the study is to learn how friends, boyfriends/girlfriends and early maturation (puberty) contribute to law breaking behaviour. We are specifically interested in learning whether or not the relationship between these factors is the same, or different for youthful males versus youthful females. The study involves filling out 6 self-report questionnaires that will take about 30 minutes to complete. You can do the questionnaires by yourself, or you can ask the researcher to read the questions to you. For your time, we will give you \$5.00 towards your canteen/Tim Horton's or MacDonald's gift card. If you would like to learn more about the study let a staff member know and they will put you in contact with the researcher.

Appendix I

Informed Consent

Relationships and delinquency: Does early maturation matter?

Informed Consent

The purpose of informed consent is to make sure that you understand the purpose of the study as well as what you will be asked to do if you decide to participate. The following information should give you enough information to ensure that you can make an informed decision as to whether you wish to participate in the study.

What is the purpose of this study? The purpose of the study is to understand how friends, boyfriends/girlfriends and early maturation (i.e., puberty) contribute to law breaking behaviour. We are specifically interested in learning whether or not the relationship between these factors is the same, or different for youthful males versus youthful females.

Who is doing this study? The following people are involved in this research project and may be contacted for further information: Leigh Greiner (Primary Investigator, 520-2600, ext. 2649) and Dr. Shelley Brown (Faculty Sponsor, Psychology Department, Carleton University, 520-2600, ext. 1505). Should you have any ethical concerns about this study, please contact Dr. Monique Sénéchal (Ethics Chair of the Department of Psychology at Carleton University, monique_senechal@carleton.ca, 613-520-2600 ext. 1155). Should you have any other concerns about this study, please contact Dr. Janet Mantler (Chair, Department of Psychology, janet_mantler@carleton.ca, 520-2600, ext. 1034).

What will you be asked to do and how long will it take?: If you choose to participate in this study you will be asked to complete 6 questionnaires which should take approximately 30 minutes to complete. The questionnaires ask questions about: 1) whether your friends (and boyfriends and/or girlfriends if relevant) engage in crime, and how close you feel to your friends (and boyfriends and/or girlfriends if relevant), 2) your attitudes as they pertain to crime 3) the nature of your relationship with your family (e.g., is your family supportive?), 4) physical changes you may have experienced as a result of puberty (e.g., hair growth, changes in height, age of first period) and lastly, 5) your criminal history.

Where is this study being conducted?: The study is being conducted at the 1) Roy McMurtry Youth Centres; 2) Peel Female Attendance Centre (Community, Peel,

Elizabeth Fry Society of Peel-Halton) and 3) Marjorie Amos Residence (Open Custody, Elizabeth Fry Society of Peel-Halton).

What are the potential risks and/or discomfort to you?: We know that the questions might be difficult as some of them are of a personal nature, but we would appreciate you answering them as honestly as you can. However, please know that your participation in this study is entirely voluntary and you may withdraw at any time without penalty. Should you withdraw none of your information will be used in this research study.

Anonymity/confidentiality. Your participation in this study is entirely voluntary. At any point during the study you have the right to refrain from answering certain questions or to withdraw with no penalty whatsoever. The data collected in this study are confidential. This means that your answers will be stored in an electronic research database with no names or personal identifiers. Only a research identification number will be assigned to your answers. The research team will maintain a separate master file linking names to research identification numbers in a secure location. Your name will not appear in any research reports resulting from the study. Only the research team will have access to your answers. We will not share your answers with your parents or staff members *UNLESS* you tell us about plans to harm yourself or others, information concerning any unknown emotional, physical or sexual abuse of children, or information about any other criminal activities not already known to authorities. If you tell us about any of these specific things we are required to report this information to the appropriate authorities.

I have read the above description of the study entitled “*Relationships and delinquency: Does early maturation matter?*” The data collected will be used in research publications and my personal identify will be fully protected. My signature indicates that I agree to participate in the study, and this in no way constitutes a waiver of my rights.

Statement of Disclosure. I understand that the information I provide is confidential, and will never be revealed to anyone except under the following circumstances: if I disclose information about plans to harm myself or others, information concerning any unknown emotional, physical or sexual abuse of children, or information about any other criminal activities not already known to authorities, the researcher is required to report this information to the appropriate authorities.

Full Name (please print): _____

Participant Signature: _____

Date: _____

Witness Signature: _____

Date: _____

Guardian/Parent Name (please print): _____

(if youth is 15 or under)

Guardian/Parent Signature: _____

(if youth is 15 or under)

Date: _____

Appendix J

Debriefing Form

What are we trying to learn with this research?

It is generally accepted that adolescents with antisocial friends tend to report higher levels of delinquency than those with few or no delinquent friends. However, how these peer influences are increased by other factors such as early maturation (i.e., puberty) is not well understood. Research has shown that early maturing adolescents are more delinquent than those who mature on time. Also, some researchers have suggested that girls are more negatively affected by early maturation than are boys as a result of the peers they hang out with (e.g. older male peers). Therefore, in conducting this study we hope to gain a better understanding of the influence that antisocial peers have on early maturing adolescents, and whether these effects are different for youthful males and females.

Why is this important to social scientists or to the general public?

As boys commit most serious delinquent behaviour, in the past there has been a tendency to focus on male offenders in both policies and theory. Therefore, what we know about the causes of female crime is limited compared to males. It is hoped that this study will improve our understanding of crime committed by girls and allow for the development of a stronger theory of delinquency that considers the importance of gender.

What do we expect to find?

Although this research is primarily exploratory in nature, we expect a number of results. First, it is expected that early maturing adolescents are more likely to acquire delinquent peers and therefore are more likely to become more antisocial themselves. Second, it is likely that the influence of delinquent peers, particularly opposite sex-peers, will be stronger for early maturing girls than for boys. Third, it is expected that having positive relationships with ones' peers may in fact reduce the seriousness and frequency of delinquency for early maturing adolescents.

What if I have questions later?

If you have any questions regarding this study in terms of the research you can contact Leigh Greiner (Principal Investigator, Psychology Department, Carleton University, lgreiner@connect.carleton.ca, 520-2600, ext. 2649), or Dr. Shelley Brown (Faculty Sponsor, Psychology Department, Carleton University, shelley_brown@carleton.ca, 520-2600, ext.1505).

Should you have any ethical concerns about this study, please contact Dr. Monique Sénéchal (Ethics Chair of the Department of Psychology at Carleton University, monique_senechal@carleton.ca, 613-520-2600 ext. 1155). Should you have any other concerns about this study, please contact Dr. Janet Mantler (Chair, Department of Psychology, janet_mantler@carleton.ca, 520-2600, ext. 1034).

Is there anything that I can do if I found this study to be emotionally draining?

If thinking about the questions that were asked in this study has made you feel upset or sad, you may wish to talk with someone. If so, please contact (individual from each site listed here) (email, phone number). **THANK YOU FOR YOUR PARTICIPATION!**