Do callous-unemotional traits and aggression predict later disruptive school behaviours?

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List of Abbreviations

ADI	All Disruptive Incidents
AGG	Aggression
AGG 75	Child Behaviour Checklist (CBCL) aggression scores above the 75th percentile, 0=low, 1= high.
AGG P/T Raw	CBCL highest aggression raw score from teacher or parent
AGG ICU 75	Aggression and CU Traits above the 75th percentile combined - dichotomous – 0=low, 1= high
AL	Adolescent Limited
APSD	Antisocial Process Screening Device
CBCL	Child Behaviour Checklist (2001)
CU	Callous Unemotional (Traits)
DISC	Diagnostic Interview Schedule for Children
DSM	Diagnostic and Statistical Manual of Mental Disorders
ICU	Inventory of Callous Unemotional Traits
ICU 75	Inventory Callous Unemotional traits above the 75th percentile, 0=low, 1= high
ICU P Raw	Inventory Callous Unemotional traits parents raw score
IQ	Intelligence Quotient
LCP	Life Course Persistent
M	Mean
SD	Standard Deviation
SDIO	Serious Disruptive Incidents Only

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Abstract

The current study obtained teacher and parent ratings of callous unemotional (CU) traits and aggression of 118 low socio economic middle school children at Time 1 and investigated the extent to which these variables individually and combined were able to predict school disruptive behaviours as by rated their teachers in Time 2 using multiple regression. Other Time 2 school variables were also assessed for their ability to add to the predictive model using stepwise hierarchical regression. The results showed both aggression and CU traits were predictive, but that CU traits did not explain additional variance over and above aggression. Two school variables were found to also explain additional variance over and above aggression at a statistically significant level. The first, that subtracted the total number of antisocial peers from total number of prosocial peers, was a stronger predictor than antisocial peers. The second, caregiver's involvement in assisting their child with school homework, was assumed to represent parental support. Interpretations, limitations and areas for future research are discussed.

CHAPTER ONE

1.0   Introduction

1.1   The Costs of Crime

Crime is a major societal problem. Social consequences of crime include the physical, psychological and emotional cost to victims, friends and relatives of offenders. Financial costs of crime for both the private and public sector are also significant and can be broken down into those associated with policy, prevention, victim impacts (health, property and intangibles loss and lost output), detection, resolution and redress. The total cost of crime in New Zealand in 2003/4 was estimated to be $9.136 billion or 6.5% of GDP (Roper & Thompson, 2006).

Less recognized are the negative factors in the lives of offenders themselves that may be caused or exacerbated by their offending (Loeber & Farrington, 2000b). These include lost opportunity to form prosocial behaviours, disturbances to social relationships with peers, partners, relatives, employers and workmates, increased truancy, early school dropout, underachievement, and reduced employment opportunities.   Furthermore offenders are at higher risk of depression, substance abuse, criminal victimization and suicide or being killed or maimed (Randall, 1999). Poorer outcomes are more likely for those that start their delinquent career early in life due to the cumulative and escalating nature of risk factors (Krohn, Thornberry, Rivera, & Le Blanc, 2001). Offenders are also more likely to become parents at an early age, making poor role models (Wei & Stouthamer-Loeber, 1999), failing to meet financial expectations and commitments and contributing towards intergenerational cycles of crime (Fergusson, Boden, & Horwood, 2006) (Loeber & Farrington, 2000a).

These negative consequences can be reduced through reformative work with offenders that is effective in reducing risk of reoffending.   While there have been claims that correctional programs to reduce reoffending are almost completely ineffective (Martinson, 1974), there is significant evidence to show appropriately targeted corrective interventions can reduce recidivism (Andrews & Bonta, 2006; Lipsey, Chapman, & Landenberger, 2001; Lösel, 1995; Lösel & Schmucker, 2005).   Canadian researchers Andrews and Bonta propose that lower rates of recidivism are achieved by treatments that focus on the principles of risk (targeting high risk offenders), need (assess and target proven criminogenic needs) and

responsivity (maximise offenders responsiveness by tailoring the intervention to the learning style, motivation, abilities and strengths of the offender) (Andrews & Bonta, 2006). Treatments programs that incorporate cognitive behavioural interventions that target criminal thinking patterns and encourage alternative prosocial behaviours appear to be particularly effective (Andrews, Zinger, Hoge, Gendreau, & Cullen., 1990). Such programmes are intensive and expensive to run, but because the costs of crime are also high programmes are normally cost effective.

Cost effectiveness of offender programmes can be further improved by more accurately predicting, and then targeting, those most likely to offend. This is especially true for those at risk of becoming chronic, serious and violent offenders. It has been repeatedly shown that the most persistent 5% or 6% of offenders are responsible for about 50% of known crime (Farrington, Ohlin, & Wilson, 1986). The volume of literature that explores the prediction of crime and antisocial behaviour dates back to the early 1900's (Hirschi, 1969) and is substantial. Appropriately, there has been a lot of emphasis on understanding and predicting those individuals most likely to become the most serious, violent and chronic offenders.

1.2 Intervening Early

Clearly there are significant advantages in making efforts to identify those responsible for the most serious crimes as early as possible (Chung, Hill, Hawkins, Gilchrist, & Nagin, 2002; Loeber & Farrington, 2000b). Gove, reviewed six of the most influential theories of deviance and found that they all explicitly or implicitly suggest that deviant behaviour escalates in seriousness as the criminal careers of delinquents continues over time (Gove, 1985). Farrington uses the term 'stepping stones' to describe the progression from childhood problem behaviours to adult crime (Farrington, 1986). Interventions that target offenders before their offending has escalated can potentially prevent future offending. Furthermore, it is also claimed that youth possess emerging traits that are more malleable than those of adults (Caldwell, Skeem, Salekin, & Van Rybroek, 2006) and therefore more amendable to treatment (Frick, 2001; Frick, Bodin, & Barry, 2000).

Delinquent youth interact with the environment in a manner that may perpetuate or exacerbate their personality development over time (Caspi, 1997). Youth also experiment with different roles as they develop and this contributes to the shaping of their personality (Caspi & Bem, 1990). Delinquent youth also often associate with other youth with similar behavioural problems, reinforcing antisocial behaviours (Cairns, Cairns, Neckerman, Gest, & Gariepy, 1988). Early interventions are therefore more likely to be successful if offending patterns and lifestyle choices have yet to become ingrained (Caldwell, et al., 2006).

1.2.1   Risk Factors and Offending Trajectories

While there has been a long tradition of researching behavioural risk factors many believe their usefulness has reached a plateau, and to progress risk factors with more affective / interpersonal characteristics require exploration (Frick, 2006). To identify youth at greatest risk of serious and violent offending early, it is important to not only consider a range of risk factors but also offending developmental trajectories. The significant risk factors are reviewed with particular emphasis on risk factors related to the school environment. Factors have been categorised under the headings 'school and community risk factors' 'parenting and family and 'child' risk factors.

1.3   Predictors of Criminality and Delinquency

1.3.1   School and Community Factors

1.3.1.1 Neighbourhood Disadvantage

Neighbourhood disadvantage is typified by a cluster of traits including: poverty, high rates of unemployment, cultural heterogeneity, and high prevalence of single parent families (Elliott, et al., 1996). These traits have a detrimental impact on social control networks, the levels of communication and the number of shared values and results in higher rates of isolation among residents and higher residential

turnover. Such communities allow criminal activity to go unmonitored or even unnoticed (Pratt & Cullen, 2005). Not surprisingly an association between neighbourhood disadvantage and delinquency is well supported empirically (Catalano & Hawkins, 1996; Herrenkohl, Hawkins, Chung, Hill, & Battin-Pearson, 2001). This relationship has been shown to be mediated by community disorganisation, which leads to a lack of 'collective efficacy', or 'social integration' where neighbours help out and trust each other and work together to discourage criminal activity (Pratt & Cullen, 2005).

1.3.1.2 Poorly Organised and Functioning Schools

Few reviews of risk factors for offending have focussed on school organisation, which is unfortunate given the important role school plays in the socialization and development of behavioural patterns of children. Well organised schools are those with purposeful leadership, constructive classroom management techniques, an appropriate academic emphasis and consistent but not overly severe sanctions. Gottfredson found that when schools are poorly organised children are less focussed and motivated and more likely to be negatively influenced by negative and delinquent peers (Gottfredson, 2000). Similarly, an earlier study by Rutter and colleagues also found an overall measure of school process was moderately correlated with student delinquency (Rutter, Maughan, Mortimore, Ouston, & Smith, 1979), although a more recent study by Baerveldt, looking at minor forms of school delinquency amongst adolescents aged 15 to 17 years in the Netherlands, found no evidence to support a relationship between school process and delinquency (Baerveldt, 1992). So while poorly functioning schools compared to well run schools may be linked with delinquency, there is an absence of empirical findings to confirm this and the direction of causality is also unconfirmed. If poor school organisation is a predictive factor, the effect size is probably relatively small.

1.3.1.3 Truancy

Truancy has been defined as school absence without parent's knowledge or approval (Fogman, 1996). Truancy has been categorised as a disobedient behaviour (it is a diagnostic criteria for conduct disorder (Association, 2000)) and is often a 'stepping stone' to more serious antisocial behaviours. Not surprisingly there are many studies showing a link between truancy and delinquency (Berg, Brown, & Hullin, 1988). However, there is evidence to support causality in both directions and also evidence of significant 'third variables' (Farrington, 1996b; Osborn & West, 1978). Farrington found that six of the ten main predictors of truancy he reviewed were also included in his ten main predictors of delinquency (Farrington, 1996b). It is therefore often argued that variables common to both (socio economic status, family criminality, poor parenting, poor school performance and impulsivity) foster the development of antisocial behaviours, and that truancy and delinquency are two behavioural symptoms. Overall there is little evidence to support truancy independently predicting later delinquency or antisocial personality when other highly correlated variables are controlled (Berg & Nursten, 1996).

1.3.1.4 School Involvement in Extracurricular Activities

Hirschi's (1969) social bond theory has been the theoretical backdrop for studies exploring the impact of school involvement on youth behaviour. It has been theorised that greater school involvement or commitment leads to increased emotional attachment and a sense of achievement that reduces the likelihood of misconduct (Jenkins, 1995). Involvement in school activities is also purported to provide time consuming alternatives to delinquency, socialize students to conventional values such as teamwork, fair play and co-operation, broaden social networks and further develop communication skills (Eccles & Barber, 1999; Hoffmann, 2002; Jenkins, 1997). However, evidence supporting a relationship between involvement in school activities and reduced delinquency is mixed. Some studies do indicate this negative relationship (Eccles & Barber, 1999; Hirschi, 1969; Jenkins, 1997). Similarly some interventions aimed at getting students more involved in school activities, such as the PALS (Participate and Learn Skills) project, have seen reductions in delinquency (Jones & Offord, 1989). Others studies,

however, have found increased school activity to increase delinquency (Welsh, Greene, & Jenkins, 1999).

A likely explanation for these diverse results involves the type of school and resource availability. There is some evidence to suggest poorer schools with a higher number of minority students, greater absenteeism (both student and staff) more disciplinary problems and lower academic achievement, create a less supportive environment with less benefits (and even detrimental consequences) from participation in school activities (Welsh, et al., 1999). It is therefore important when researching the predictive ability of involvement in school activities to consider school characteristics and resources.

1.3.2   Parental and Family Factors

Parental background, traits, behaviours and socialization strategies have all been found to be strongly influence childhood antisocial behaviour (Thornberry, Freeman-Gallant, & Lovegrove, 2009). This is partially explained by intergenerational transmission theories.

1.3.2.1 Socio Economic Status / Economic Disadvantage

Like neighbourhood disadvantage and poorly organised schools, socio economic status is another macro-level theory of criminality, unlike the individual risk factors covered below. Children of families categorised as living with economic disadvantage, in poverty, as part of the lower class or with low socio economic status, have regularly been found to be at greater risk of delinquency and violent crime (Bolger, Patterson, Thompson, & Kupersmidt, 1995; Merton, 1938; Peterson & Krivo, 2005; Shaw & McKinlay, 1929). Lipsey and Derzon, in an ongoing meta analysis of prospective longitudinal studies, tested a large number of predictors and found economic disadvantage to be one of the strongest predictors of violent or serious delinquency from ages 6 to 11 years (Lipsey & Derzon, 1998). More recently, Pratt and Cullen (2005) found the relationship between poverty and crime to be one of the strongest in their analysis of macro-level predictors of crime.

In efforts to examine this relationship, two perspectives have dominated. Individual family poverty can occur in the context of community disadvantage and low community integration, and the evidence suggests that this contributes to child delinquency independently (Maughan, 2001). The more direct link involves economic hardship putting mounting stress on parenting practices (Larezelere & Patterson, 1990). This has been found to increase coercive parenting and reduce parent's emotional availability to their children's needs, resulting in increased antisocial externalizing behaviours (McLoyd, 1990).

1.3.2.2 Parental Support, Behavioural Control and Psychological Control

Parent-child relations has been well researched and has led to the identification of three global measures of parental behaviour; *support* (involvement, responsiveness, affection and connectedness to the child), *behavioural control / parental monitoring / supervision* (regulation of the child's behaviour through consistent, firm and transparent discipline) and *psychological control* (controlling the child's behaviour through love withdrawal and guilt induction) (Barber, Olsen, & Shagle, 1994; Galambos, Barker, & Almeida, 2003). Parenting styles also involve different levels of support and control (authoritative - high support with high control: authoritarian - low support - high control; indulgent - high support - low control; and neglectful - low support - low control). This review however, will focus more specifically on the underlying global measures. Each has been linked with externalizing child behaviours, although intertwined is the influence of delinquent peers as discussed below (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000).

Parental support is proposed to protect a child from delinquency by providing feelings of psychological wellbeing, giving the child confidence and self esteem and leading to general social and academic competence. Supported children, it is proposed, feel more comfortable, loved, and accepted (Rollins & Thomas, 1979) and are less inclined to risk parental disapproval by engaging in delinquency (Hirschi, 1969). Support has been found to link negatively and strongly to externalizing problems in adolescence (Fauber, Forehand, Thomas, & Wierson, 1990) and delinquency (Barnes & Farrell, 1992), although others have been unable to find a direct influence (Galambos, et al., 2003). Evidence is divided on whether

maternal or paternal support is the more critical (Cota-Robles & Gamble, 2006). Moderating factors include child gender and age (Hoeve, et al., 2009).

Appropriate behavioural control refers not only to fair and consistent discipline, but also parents' knowledge of their children's whereabouts, companions and activities. The importance of behavioural control stems from a need for a sufficient regulation of behaviour so a child can learn the nuances of social interaction that need to be recognized and followed to be a competent member of the community (Barber, et al., 1994). A lack of appropriate control has been claimed to be the strongest parental predictor of delinquency (Smith & Stern, 1997) but again, the findings have been inconsistent. The difficulty appears to lie with the nature of this relationship where optimal control that is consistent, respectful and not coercive can minimize delinquency but, too much (rigidity) or too little (laxness) can lead to problem behaviours (Barnes & Farrell, 1992). Determining and measuring optimal levels of control is problematic for researchers as well as parents, as adolescents are moving through a challenging transitional period where mutual agreement over the appropriateness of boundaries and levels of independence is difficult to establish (Barnes & Farrell, 1992). Ultimately control that is tailored to the child's needs and abilities is most effective (Rothbaum & Weisz, 1994).

Exerting undue psychological control can be detrimental as all children need to have psychological autonomy to interact and learn that they are competent and valued individuals. This enables a clear sense of personal identity, resulting in independence and growth. Parents that engage in strategies of guilt induction and love withdrawal through binding, constraining or rejecting interactions simultaneously resist their adolescence's desire for autonomy while challenging their sense of self worth, self esteem and individuality (Hauser, 1991). Psychological control is often more commonly associated with internalizing problems than externalizing (Barber, et al., 1994) although Hoeve et al. (2009), in a meta-analysis of 161 studies, found psychological control to have the strongest link with delinquency of all parental behaviours, including behavioural control (Hoeve, et al., 2009).

It is important to note that some research on cycles of coercion suggests bidirectional influences. Antisocial children cause parents to be irritable, ineffective in discipline, and to withdraw their support

and attention (Smith & Stern, 1997). This process can accelerate the child's antisocial behaviour, which, in turn, precipitates further deterioration in parenting. These rapid changes in both child and parent behaviour often occur in a relatively short period of time (Thornberry, 1987).

1.3.2.3 Family Violence and Maltreatment

Children can be affected by family violence as child victims of maternal or paternal violence, but also through exposure to or witnessing of intimate-partner violence. The *cycle of violence* hypothesis (Widom, 1989b) stems from social learning theory and claims that exposure to violence teaches children that controlling others through coercion and violence is normal, acceptable and a viable means to obtain desired goals (Ireland & Smith, 2008). Learning violence in a family context strengthens a generalized cultural outlook and orientation towards violent and antisocial behaviour (Straus & Gelles, 1979).

Early researchers were united in supporting the general conclusion that experiencing maltreatment at some point between birth and adolescence increases the likelihood of antisocial behaviour in adolescence and adulthood, including violence and delinquency (Briere & Runtz, 1990; Cavaiola & Schiff, 1988) (Lemmon, 1996; Lewis, Shanok, Pincus, & Glaser, 1979; Widom, 1989b). Experience may take the form of witnessing intimate-partner violence or direct victimisation in physical abuse or severe neglect.

However, more recently, scholars have highlighted the many confounding variables and have proposed that the apparent association between experiencing violence in childhood and antisocial outcomes in their own lives could potentially reflect the dysfunctional social and family context within which abuse and exposure typically occurs (Ehrensaft, et al., 2003; Fergusson & Horwood, 1998; Fergusson & Lynskey, 1997). It is well established that maltreatment is more common in family contexts that include social disadvantage, poverty, limited parental education, parental criminality and parental alcohol and drug abuse (Corvo & Carpenter, 2000; Fergusson, et al., 2006; Fergusson & Horwood, 1998). Questions have also been asked about how the different forms of victimization e.g. being a victim of parental violence, witnessing intimate partner violence, and being both a victim and observer, (termed the *double whammy*) affect behaviour and development when the above mentioned factors are controlled.

Unfortunately findings have been equivocal. Yates and colleagues controlled for a range of other family stressors and found exposure to partner violence resulted in greater externalizing problems for boys, but internalizing problems for girls (Yates, Dodds, Sroufe, & Egeland, 2003). Sternberg and colleagues found no difference between witnessing or being victim of violence, a finding supported by Kitzman and colleagues for boys and girls in a meta-analysis examining 118 studies (Kitzmann, Gaylord, Holt, & Kenny, 2003). More recently Sternberg, in a meta-analytic study, found those that experienced multiple forms of family violence were at greater risk of exhibiting externalizing outcomes than children who experienced only one form of abuse (Sternberg, Baradaran, Abbott, Lamb, & Guterman, 2006), although this only held for four to nine year olds and not ten to fourteen year olds. This is somewhat consistent with the general finding that vulnerability to developmental problems increases as the number of stresses increases (Rutter, 1983). However, while Myolan and colleagues found dual exposure increased risk over and above either experiencing violence directly or witnessing, when other mitigating factors were controlled, the difference was statistically insignificant (Moylan, et al., 2010).

Early researchers found that other forms of maltreatment, including sexual abuse and neglect in childhood, were also strongly associated with aggression, conduct problems and criminality (Arthur, 2007). Again, however current evidence suggests while both forms of abuse do play a causal role, it is much more modest than originally understood and neither is as strong as physical abuse (Coie & Dodge, 1998). Young victims of sexual abuse or neglect are more likely to experience problems with lower self esteem and internalizing problems (Fergusson, Horwood, & Lynskey, 1996).

In summary, it appears that experiencing any form of maltreatment does increase the risk of violent and antisocial offending. However as attempts to control for social and family contextual confounds become more comprehensive, the effect size of maltreatment is significantly reduced (Fergusson, et al., 2006).

1.3.2.4 Parental Criminality

Crime has long been claimed to run in families (Farrington, Coid, & Murray, 2009; Farrington, Jolliffe, Loeber, Stouthamer-Loeber, & Kalb, 2001; Ferguson, 1952; van de Rakt, Nieuwbeerta, & Apel, 2009).

Children with parents or siblings who have criminal convictions and/or antisocial personality disorder are significantly more likely to acquire a conviction themselves (Farrington, Barnes, & Lambert, 1996b; van de Rakt, et al., 2009). Farrington has derived six explanations for intergenerational criminality (Farrington, et al., 2001). The *cycle of deprivation* theory proposes that criminal behaviour is one of many criminogenic factors that is transmitted alongside poverty, teenage pregnancy and living in deprived neighbourhoods (Lahey & Waldman, 2003). *Imitation* is when children learn criminal behaviour by observing and modelling the behaviour of their parents. *Assortative mating* is when men and women with criminal backgrounds are more likely to meet, marry and procreate, increasing the likelihood of offspring also becoming delinquent as both parents model antisocial behaviours further increasing the likelihood of *imitation*. The fourth explanation suggests criminality has an entirely genetic component, whereby a propensity to offend inherited directly from one's biological parents. The fifth is environmental, criminal parents tend to create a home environment and adopt parenting strategies that are harsh and coercive, as previously discussed. Finally Farrington suggests that official monitoring by law enforcement agencies of known criminal families can be overly intensive increasing the likelihood of convictions, compared with noncriminal families (Farrington, et al., 2001).

Validating these theories is a difficult process as other known familial risk factors including parental substance abuse, broken homes, child abuse, poor supervision, large family size, birth complications and neurological deficits need to be controlled. However, there is strong evidence to support some of these explanations while for the others the evidence is mixed.

While it is difficult to determine exactly what is inherited, whether it be a general propensity to offend, neurological deficits or personality traits that are associated with offending, twin and adoptions studies (Rhee & Waldman, 2002) and behavioural genetic research (Gelhorn, et al., 2006) suggest criminality has moderate to substantial heritability.

While contextual and environmental factors will vary from one generation to the next, at the same time the proverb *the apple doesn't fall far from the tree* is supported by research in that the many criminogenic environmental and contextual factors that contributed to parents offending are often then replicated,

increasing the likelihood their offspring subsequently offend (Connell & Goodman, 2002).

Finally, there is also support for Bandura's social learning theory (Bandura, 1977) suggesting that as role models, parents that offend while often discouraging their children from following in their footsteps, are failing to appreciate their actions send a more powerful message than their words.

Initially researchers considered parenting largely a maternal domain and early studies often excluded fathers, assuming their influence on child developmental outcomes would be negligible (Phares & Compas, 1992). Recent studies including both parental influences have confirmed that continuing contact and the quality of the contact are the essential requirements for intergenerational transfer of risk and the father's influence is no less important (Connell & Goodman, 2002). Same sex influences have also been researched, given children are more influenced by models of greater similarity to themselves (Bandura, 1977). This could help explain why one of the strongest predictors of criminality for a boy is his father's convictions (Kim, Capaldi, Pears, Kerr, & Owen, 2009), whereas maternal convictions are only a risk factor as a mediator of ineffectual parenting (Thornberry, Freeman-Gallant, Lizotte, Krohn, & Smith, 2003), although the lower number of female offenders makes it more difficult to derive robust findings.

Sibling criminality is also a strong risk factor. Irrespective of parental criminal convictions, a criminal sibling increases the likelihood of that child offending significantly (Slomkowski, Cohen, & Brook, 1997). This is proposed to be explained by social learning theory and poor role modelling, (Arthur, 2007; Lauritsen, 1993).

1.3.2.5 Parental Depression

Parental depression has been found to associate with a range of negative outcomes in children (Phares, 1996), with claims including conduct disorder and antisocial behaviours (Hirshfeld-Becker, et al., 2008). Parents with depression have a reduced capacity to nurture positive development in children, (Besley, 1984), are more likely to engage in hostile, irritable and coercive interactions with their children, and be perpetrators of child maltreatment (Thornberry, et al., 2009). Depressed mothers or fathers are also more

likely to be under financial stress and have less social support (Connell & Goodman, 2002), and to be abusing alcohol and drugs (Gunnarsdottir, et al., 2000) and could therefore indirectly, via parenting, be creating a criminogenic home environment. Given depression in adults and children is known to coexist with antisocial behaviour (Besley, 1984), it is important to control for this association in assessing any link between parental depression and child delinquency.

Researchers have therefore attempted to determine whether the link between parental depression and child antisocial behaviours is a direct link or an indirect one, via parenting. Evidence is mixed. Thornberry and colleagues found evidence of a direct maternal influence but an indirect association for fathers via parenting (Thornberry, et al., 2009). This compares with Hirshfeld-Becker and colleagues who found elevated disruptive behaviour disorders in offspring of depressed mothers was explained by antisocial behaviours in the mothers or fathers (Hirshfeld-Becker, et al., 2008). Similarly, Connell and colleagues, in a meta analysis of 134 independent studies, found depression in mothers was not related to their children's externalizing behaviours although it was related to internalizing, whereas there was no relationship with either externalizing or internalizing for fathers (Connell & Goodman, 2002). In summary there appears to be very little significant difference between maternal and paternal depression in terms of influence on offspring delinquency. The link between parental depression and offspring delinquency appears to be more likely, an indirect one, via criminogenic parenting practices.

1.3.3   Child Risk Factors

1.3.3.1 Hyperactivity, Impulsivity & Inattention

Hyperactivity is defined as high motor activity (Martin, et al., 1994) or a pattern of restless, inattentive and impulsive behaviour in children (Lynam, 1996). Hyperkinesis, the construct used to initially describe hyperactivity in the DSM-II, refers to short attention span, high distractibility, and low frustration tolerance. Hyperactivity is a critical component of Attention Deficit Hyperactivity Disorder (ADHD). While impulsivity has been widely studied, definitions have been inconsistent as it has been claimed that impulsivity is a multidimensional construct with both behavioural and cognitive components (Martin, et

al., 1994) causing significant methodological confusion (Romero, Luengo, & Sobral, 2001). Definitions include inability to delay gratification, response perseveration, poor self control, lack of foresight for consequences, the inability to behave in a socially approved manner and the inability to inhibit behaviour (Gordon, 1979; Kopp, 1989; Martin, et al., 1994; Milich & Kramer, 1984; Olson, Schilling, & Bates, 1999). Inattention has been defined as an inability to sustain concentration on particular environmental stimuli (Martin, et al., 1994) or during everyday activities (Hill, Degnan, Calkins, & Keane, 2006), and is also a component of ADHD.

Gray's model suggests that individuals that are highly hyperactive, impulsive and inattentive are drawn to high risk sensation seeking activities due to high reward sensitivity and difficulty in processing punishment signals. This makes them prone to antisocial acts and indifferent to the longer term consequences, Newman (1987, as cited in (Romero, et al., 2001).

While each construct shares similarities and are often bracketed together, (the hyperactivity-impulsivity-attention deficit or HIA syndrome), (Farrington, 1996a) as a strong predictor of delinquency and violent behaviour, (Lynam, 1996; Pardini, 2006) they are, importantly, also studied separately as independent constructs that play unique predictive roles. For example, inattention is often, although not always, argued to be less predictive than hyperactivity and impulsivity (Babinski, Hartsough, & Lambert, 1999) and predictive of delinquency indirectly by negatively impacting on academic performance that can influence externalizing behaviours (see below) (Maguin & Loeber, 1996; Pardini, 2006).

A key component of both hyperactivity and impulsivity - low self control, has been claimed by Gottfredson and Hirschi in their general theory of crime as the primary cause of criminal behaviour when combined with access to criminal opportunities (Grasmick, Tittle, Bursik, & Arneklev, 1993). While this theory has many critics, claiming it to be too simplistic and overlooking other important risk factors, low self control has widespread empirical support, confirming that while it is not the only cause of criminality it is often a critical feature (de Kemp, et al., 2009; Grasmick, et al., 1993; Martin, et al., 1994; Olson, et al., 1999; Vitacco, Neumann, Robertson, & Durrant, 2002; White, et al., 1994). Nevertheless, low self control is clearly important. Studies that control for low self control find a significantly reduced causal

role for other well established risk factors, such as 'previous criminality' and 'parenting influences' (Evans, Cohen, Burton, Dunaway, & Benson, 1997).

1.3.3.2 Intelligence and Academic Underachievement

Intelligence was one of the first predictors of delinquency to be proposed (Maguin & Loeber, 1996). In 1920 Henry Goddard claimed many institutionalized persons were *feebleminded* and half of all juvenile delinquents were mental defectives (Goddard, 1920). However, in 1931 Sutherland successfully disputed the link between intelligence and criminality and for more than four decades it was largely ignored (Siegel & Welsh, 2008). Its re-emergence was stimulated by a landmark article in 1977, in which Hirschi and Hindelang reviewed the IQ delinquency relationship and found IQ correlated with delinquency in the range of 0.16 to 0.31 depending on how delinquency was measured (Hirschi & Hindelang, 1977). They refuted many of the arguments dispelling the link, for example, that the less intelligent were more likely to get caught, and by presenting self report data as well as official records. More recently, measures of the IQ of delinquents and non delinquents has consistently been found to differ by approximately a half to a full standard deviation, across young and adult offenders (Koenen, Caspi, Moffitt, Rijsdijk, & Taylor, 2006; Lynam, Moffitt, & Stouthamer-Loeber, 1993).

With general agreement that a link does exist, researchers have become interested in what this means. Hirschi and Hindelang claim that lower IQ, or cognitive / executive deficits, could affect delinquency indirectly through school performance. Children with a low IQ do poorly in school, and poor school performance leads to frustration, disenchantment, alienation, lower expectations and subsequently to delinquent behaviour (Burfeind & Bartusch, 2006; Hawkins & Weiss, 1985). The evidence in support of this indirect link is mixed.

Koenen and colleagues provide strong evidence of a link between low IQ at five years and antisocial behaviour at seven years but fail to control for other common antecedents (Koenen, et al., 2006). Fergusson and Horwood claim that IQ plays a role in school performance but dispute a definite link between school performance and delinquency (Fergusson & Horwood, 1995). In a later paper with

Ridder, Fergusson and Horwood, using the same sample but with data over a 25 year period, fail to find evidence that IQ assessed at eight to nine years predicts criminality as an adult. Evidence supporting this link is instead explained by early conduct problems and family circumstances (Fergusson, Horwood, & Ridder, 2005).

Hinshaw has proposed that, while the claimed link was theoretically possible, IQ was such a heterogeneous construct that it likely masks more specific aspects of cognitive functioning that hold stronger relationships with externalizing behaviour (Hinshaw, 1992). Specifically a more direct link has been proposed where a lower IQ, especially verbal IQ or crystallized intelligence, contributes to delinquency through misunderstanding rules (Lynam & Henry, 2001), poor social cognitive information processing (Hinshaw, 1992), and deficiencies in learning, abstract thought and problem solving (Maguin & Loeber, 1996).

A reverse link has also been proposed, whereby delinquency causes lower IQ, as delinquents are at greater risk of head injuries and illicit drug use, although evidence to support this theory is lacking. Finally, a third variable has been proposed that correlates with both IQ and delinquency. Moffitt has suggested that even mild cognitive deficits in the context of stressed family environments may initiate a chain of events that culminate in conduct problems. As well as family circumstances, social class, race, test motivation, and early childhood conduct problems have all been considered as mediating variables. While all except test motivation do appear to play significant roles (Fergusson & Horwood, 1995; Fergusson, et al., 2005; Tremblay, et al., 1992), the overall consensus appears to be that intelligence in isolation is still predictive of later antisocial behaviour, although perhaps to a significantly lesser degree than is often claimed as other risk factors clearly interact and mediate this relationship (Hinshaw, 1992; Lynam, et al., 1993; Maguin & Loeber, 1996).

1.3.3.3 Conduct Disorder and Previous Delinquency

Andrews and Bonta claim criminal history as one of their *big four* predictors of crime (Andrews & Bonta, 2006), while others go further stating the best predictor of future criminality is past criminality (Siegel &

Welsh, 2008). This notion of continuity of maladaptive behaviour is widely claimed and empirically supported in a variety of countries, using different arrest standards, and different age groups (Caspi & Moffitt, 1995; Farrington, 1989a; Frick & Dickens, 2006; Loeber & Le Blanc, 1990; Maughan & Rutter, 2001; Robins, 1978; White, Moffitt, Earls, Robins, & Silva, 1990).

However, while previous antisocial behaviour is a strong predictor and serious adult offenders predominantly have histories of child or youth delinquency, the relationship is certainly not absolute as most antisocial children and adolescents desist from offending (Farrington, 1989a; Loeber, 1996). It has often been found that approximately only half of the children diagnosed with opposition defiant disorder (ODD) will later be diagnosed with conduct disorder (CD) and half of those with antisocial personality disorder (ASPD) (Caspi & Moffitt, 1995; Loeber & Coie, 2001). White and colleagues using a New Zealand birth cohort of 1037, used early antisocial behaviour to predict later antisocial behaviour of a severe and pervasive nature but experienced a false positive rate of 84.7% (White, et al., 1990).

To better understand this relationship researchers have focussed on when antisocial behaviours first emerge and their frequency, range, and severity and how these variables affect later behaviours (Loeber, 1996). Serious and violent adult offenders will more than likely start their criminal careers early, (Moffitt, 1993a) and engage in a wide variety of offences with increasing severity over time (Offord, Lipman, & Duku, 2001). *State dependence* has been proposed to explain a theme of continuity (Nagin & Paternoster, 1991). It is defined as a reduction in inhibitions against engaging in criminal acts, as a result of prior offending.

Caspi and Moffitt derived the term *cumulative continuity* which represents an interplay between predisposing characteristics and ongoing exposure to criminal risk factors (Caspi & Moffitt, 1995). Consequences of offending, including personal gain, increased contact with antisocial peers and heightened drug use, unstable employment and increased family stress and conflict serve to maintain many antisocial thought patterns and cognitions and increases the likelihood of continued offending (Caspi & Moffitt, 1995).

Another important concept in analyzing the relationship between early and later offending is *heterotypic*

continuity. This refers to a commonly found pattern where the type of antisocial behaviours expressed initially change from those expressed as the offender develops through adolescence and adulthood. For example, the *authority conflict pathway* begins with young children being stubborn, then defiant, and finally engaging in truancy and running away from home. The *covert pathway* starts with lying and shoplifting, escalates to property damage and then burglaries. Finally the *overt pathway* begins with minor aggression (annoying others, bullying), and followed by physical fighting and finally violence including sexual assaults (Loeber, et al., 1993). Not only does the type of offending vary during development, but offending can be episodic and can vary in frequency over time. Lahey and colleagues, in a four year longitudinal study of the continuity of the diagnosis conduct disorder (CD), found from one year to the next only half of the boys met criteria, however when the interval between assessments was extended to four years, the stability over time was significantly higher at 88%. This suggested some behaviours were either insufficient to be diagnosed as CD or were temporarily dormant (Lahey, et al., 1995).

In summary, while a history of previous offending is a strong predictor of future offending, the age of onset, frequency, and severity of offending are critical considerations while it is also essential to appreciate that desistence over time is a common occurrence.

1.3.3.4 Antisocial / Delinquent Peers

There is consistent and mounting evidence to suggest that adolescents are significantly more likely to engage in antisocial behaviours if they are part of a delinquent peer group (Ary, et al., 1999; Woodward, Fergusson, & Horwood, 2002). Van der Lann and colleagues using a stratified random sample of 1460 Dutch adolescents found 65.9% of those that committed an offence acted with co-offenders (van der Lann, Blom, & Kleemans, 2009). Furthermore, deviant peer affiliation has found to be one of the strongest predictors of later delinquency (Erickson, Crosnoe, & Dornbusch, 2000; Patterson, Capaldi, & Bank, 1991; Quinton, Pickles, Maughan, & Rutter, 1993). As individuals move through middle childhood into adolescence they place more importance on the time spent with peers and establishing peer

relationships thus increasing their susceptibility to peer influence (Monahan, Steinberg, & Cauffman, 2009).

The two main theories proposed to explain the relationship between deviant peer relationships and antisocial behaviour are peer socialization and peer selection (Fite & Colder, 2007). The peer socialization model hypothesizes that deviant peers encourage other peers to engage in antisocial behaviour through a range of mechanisms including imitation, social learning, peer group influence, and social facilitation. By teaching, modelling and reinforcing antisocial behaviour deviant peers provide motivation for non deviant individuals to act similarly (Agnew, 1993). The peer selection model posits that delinquents select peers that support their offending (Bauman & Ennett, 1994; Fite & Colder, 2007). These peers are similar to the delinquents themselves, and accept their aggressive and antisocial behaviour. This differs from the peer socialisation model in that it implies the delinquent peer affiliation does not play a causal role in the development of antisocial behaviour, although it may help maintain it (Moffitt, Caspi, Dickson, Silva, & Stanton, 1996). Fergusson et al (2002) specifically tested for confounding factors that might explain the relationship between peer delinquency and antisocial behaviour. While a substantial amount of association appears to be noncausal, they concluded that the remaining association did suggest deviant peer affiliation does play a significant causal role in the development of delinquency (Fergusson, Swain-Campbell, & Horwood, 2002).

1.3.3.5 Prosocial / Non Delinquent Peers

The literature on prosocial or non delinquent peers as a potential protective factor or a lack of peers as a risk factor is sparse. Most research specifically focuses on delinquent peer relationships. However, some findings indirectly suggest that prosocial peers play a role in at least disrupting the peer delinquency findings. For example it has been found that friendship networks that contain both delinquent and non-delinquent friends are less effective in providing clear behavioural guidelines, cohesive norms and consistent values regarding behavioural expectations (Haynie, 2002). In absence of specific research findings, it would be expected from social learning theory that if behaviour (e.g. prosocial) is learned by

observing others, and this process increases the likelihood of that behaviour being acquired by an individual, then a lack of prosocial peers and exposure to prosocial learning experiences would likely have a detrimental effect.

1.3.3.6 Peer Rejection

Research has clearly indicated that children rejected by peers are at greater risk of conduct problems (Laird, Jordan, Dodge, Pettit, & Bates, 2001; Miller-Johnson, Coie, Maumary-Gremaud, & Bierman, 2002). There are two mechanisms that claim to explain this association. The first proposes that peer rejection acts as a marker and the same factors that lead to peer rejection are also responsible for the later antisocial behaviour, so there is no actual causal link (Dodge, et al., 2003). In this model a third variable, potentially even of genetic origin, that is closely associated with peer rejection is the cause of externalizing behaviours (Laird, et al., 2001). Aggression that is highly correlated with peer rejection has been theorised to account for the association between peer rejection and antisocial outcomes. Consistent with this approach there is evidence that antisocial behaviour precedes peer rejection and is often the primary reason cited for the child being rejected (Coie, 2004). However significant evidence is mounting that suggests that peer rejection does have a causal effect independently of aggression (Coie, Lochman, Terry, & Hyman, 1992; Miller-Johnson, et al., 2002) and concurrent and earlier behaviour problems (Laird, et al., 2001) although only for those over the median in aggressive behaviour (Coie, 2004). This holds equally for boys and girls, (Coie, 2004).

A second peer rejection model proposes that peer rejection does serve to maintain or exacerbate antisocial behaviour patterns. This causal link has a range of theoretical explanations. For example, children who suffer peer rejection because of their poor social skills are deprived of important opportunities to develop these skills (Kupersmidt, Coie, & Dodge, 1990). Rejection as a social stressor increases the tendency to attribute hostile intent from peers and react with aggression. This can lead to negative expectations about future relationships (Dodge, et al., 2003). Other researchers have found, consistent with the notion of social homophily, that socially rejected children will seek to interact with other rejected children, often

outside school, commonly reinforcing one another's aggressive behaviours (Laird, et al., 2001). Patterson et al (in presss, as cited in (Dishion, Patterson, Stoolmiller, & Skinnner, 1991) refer to 'shopping' as a tendency to seek peer group settings that do not require behaviours in which the child is lacking or deficient. Successful friendships form where common ground is established and there is a good match of skills and interests. Finally, being rejected by peers could serve to create cognitive biases such as inward hostility and lower self esteem that then contribute to later maladjustment and conduct problems.

There is also evidence that the link between peer rejection and antisocial behaviour is influenced by age, with younger children more susceptible than older children, while children that are repeatedly rejected from kindergarten to middle school are at greatest risk (van Lier, Vitaro, Wanner, Vuijk, & Crijnen, 2005).

1.3.3.7 Aggression

Despite aggression being a widely researched concept in the criminal literature it is poorly defined and often misunderstood (Tremblay, et al., 1999). Loeber and Stouthamer-Loeber define aggression as those acts that inflict bodily or mental harm on others and differentiate aggression from violence –aggressive acts causing serious harm, such as aggravated assault, rape, robbery and homicide (Loeber & Stouthamer-Loeber, 1998). Coie and Dodge endorse Parke and Slaby's definition of behaviour that is aimed at harming or injuring another person (Parke & Slaby, 1983). This definition emphasizes intent and therefore requires a social judgement by an observer that the act *intended to harm* (Coie & Dodge, 1998; Frick & Marsee, 2006). Aggression is not limited interpersonal physical contact, it can include property damage, verbal aggression, relational aggression (harming others through purposeful manipulation or damage to their peer relationships, (Crick, 1996)) and intimidation.

Physical aggression can be further broken down to proactive and reactive aggression (Card & Little, 2006). Proactive aggression refers to deliberate acts directed towards obtaining desired goals (Vitaro, Gendreau, Tremblay, & Oligny, 1998) and is also called instrumental, premeditated or cold-blooded aggression. Reactive aggression refers to angry, often emotionally dysregulated, responses to perceived

offenses or frustrations (Card & Little, 2006; Crick, 1996; Fite & Colder, 2007) and is also known as *defensive*, *retaliatory*, *hostile* or *hot blooded aggression*. Reactive aggression is often associated with deficits in social information processing, for example ineffective problem solving in social situations resulting in hostile attributional bias (Coie & Dodge, 1998; Fite & Colder, 2007; Pope & Bierman, 1999). While proactive and reactive aggression are highly correlated, (with coefficients ranging from .14 to .83), they have been found to be conceptually distinct (Fite & Colder, 2007; Vitaro, et al., 1998). Studies have often shown that a significant number of conduct disordered children only show reactive forms of aggression (Dodge & Coie, 1987a) whereas most children that show high levels of proactive regression also show high levels of reactive aggression (Brown, Atkins, Osbourne, & Milnamow, 1996).

Most early theories on aggression were influenced by social learning theory and considered aggression as a learnt behaviour. Patterson, for example claimed aggressive behaviours are often learnt in family or peer contexts where such behaviours are modelled, elicited and reinforced (Patterson, 1982). Bandura's Bobo doll experiment in 1961, was theoretically influential in demonstrating how quickly an aggressive observed behaviour could be acquired (Bandura, 1977).

Tremblay however, has recently argued against these theories claiming evidence to support physical aggression is not learnt, but a way of expressing anger and an instrument in achieving goals, for example taking another child's toy (Tremblay, 2003). He believes physical aggression is a natural behaviour first evident at 12-17 months that most children learn to control, but a minority struggle to do so (Tremblay, et al., 1999). During development most children learn alternative strategies to achieve goals, however, for those that do not, as they grow older and stronger their aggression becomes more problematic and more visible. Tremblay therefore suggests the question is not 'how or why a child has learned to physically aggress' but 'why has the child not learnt to inhibit physical aggression?'

Eley and colleagues using twin studies found physical aggression to be highly heritable, accounting for 42-76% of the total variance with shared environmental influences only 4-25% (Eley, Lichtenstein, & Moffitt, 2003). Furthermore while the genetic influence on aggression appears to increase dramatically

from three to seven years of age, evidence suggests it then remains stable throughout adolescence (Burt & Neiderhiser, 2009).

A review by Olweus in the late 1970's concluded that aggression had very high stability or consistency throughout one's life course (0.68), comparable with personality traits and the consistency found in intelligence testing (Olweus, 1979). Huesman and colleagues in a longitudinal study spanning a quarter of a century found peer rated aggression at age eight significantly predicted self reported aggression at age 30 (Huesman, Eron, Lefkowitz, & Walder, 1984). Robins, in a classic longitudinal study spanning 30 years with a sample of over 500 boys, reported equally comprehensive findings (Robbins, 1966). Farrington in a prospective longitudinal study with over 400 male participants also found strong continuity in aggression and violence from childhood to adulthood (Farrington, 1989a). Continuity was highest for individuals whose early problem behaviour was either highly frequent, high in variety, began at an early age or was observed in multiple settings (Loeber, 1982; Tremblay, 2003; Viemero, 1996).

Females are also similar in terms of continuity for aggression (Silverthorn, Frick, & Reynolds, 2001) although there is also evidence of somewhat lower correlations (Cummings, Iannotti, & Sahn-Waxler, 1989). Farrington also found that childhood aggression was strongly correlated with adult deviancy, leading him to speculate that the cause of childhood aggression must be essentially the same as the cause of persistent and extreme antisocial behaviour (Farrington, 1991).

In light of the relative stability of aggression throughout the life course and the overlapping nature of aggression and criminal offending, it is not surprising that early aggression has consistently been found to be an extremely strong predictor of later crime (Huesman, et al., 1984; Loeber & Le Blanc, 1990) (Lynam, 1996; Stattin & Magnusson, 1989) and independent of chronic opposition and hyperactivity (Nagin & Tremblay, 1999). However this aggression - criminality relationship was stronger for boys. Broidy and colleagues (2003) found a less consistent relationship between physical aggression and adolescent offending for girls (Broidy, et al., 2003). This is consistent with other studies that also find a significant relationship but of a lesser magnitude for girls (Stattin & Magnusson, 1989; Zoccolillo, Tremblay, & Vitaro, 1996). With respect to the type of crime, evidence suggests a particularly strong

connection between early aggressiveness and later violent offenses (Stattin & Magnusson, 1989), although childhood physical aggression also exhibits a significant link with non violent offending in adolescence (Broidy, et al., 2003; Farrington & Loeber, 2000).

1.4   Offending Trajectory Theories

Prediction of criminality from risk factors like those reviewed above is further complicated by findings that suggest several different criminal trajectories or pathways exist and that the pertinent risk factors may be different. Moffitt (1993a) has claimed that there are marked individual differences in the stability of antisocial behaviour.   Both Moffitt and Patterson propose age of onset and the duration as the key defining attributes to distinguish between two types of offenders (Moffitt, 1993a, 1997, 2003; Patterson, et al., 1991; Patterson, Reid, & Dishion, 1992). Moffitt describes individuals that begin offending in early childhood and continue to offend into adulthood as life-course-persistent offenders, and those who first become deviant in adolescence but then generally refrain from offending, as adolescence-limited offenders (Moffitt, 1993a). Patterson made a similar differentiation calling the two groups early starters and later starters (Patterson, et al., 1991).

1.4.1   Adolescence –Limited Offenders (AL) / Late Starters

Adolescence-limited offenders or late starters are common, situational and temporary offenders. Their offending is more flexible and adaptive rather than rigid and stable (Moffitt, 1993a). Opinions differ on the severity of their offending compared to life-course persistent offenders. Moffitt claims that despite a lack of delinquency from ages 3 to 11, by age 15 newcomers had equalled their preschool antisocial peers in the variety of offending, frequency, and the number of juvenile court appearances making the two groups indistinguishable.   However Krohn and colleagues claim that late starters engage in more moderate offending with less violence (Krohn, et al., 2001) and Loeber claims that they engage in nonaggressive delinquent behaviours (Loeber & Farrington, 2000b). Researchers have been ineffective in

distinguishing between the two offender types on the basis of cross-sectional snapshots of their antisocial behaviour during adolescence (Moffitt, 1990). "The fact is, … that currently we have few tools to distinguish between those young children who will continue with their problem behaviour and those that will not." (Loeber & Farrington, 2000b).

Moffitt claims the etiology of adolescence-limited offending has no genetic origin, nor is it related to early environmental influences or family adversity, but rather lies in social processes (Moffitt, 1993a). It is suggested their offending is a normative response to reaching puberty in a modern industrialized world where there exists a maturity gap between their biological age and social age. Adolescents are biologically ready to engage in adult life but have limited access to mature privileges and responsibilities with many social and legal restrictions (Moffitt, 1993a, 2003). With newly emerging peer relationships and self conscious values, attitudes and aspirations, teenagers that are desperate to be regarded consequentially become increasingly influenced by rebellious or delinquent peers and engage in offending to breach the maturity gap and obtain greater status and autonomy (Moffitt, 1993a).

While the adolescent-limited offenders by definition desist from offending as they move into adult roles, 'snares' such as a criminal record, imprisonment, addiction, teenage parenthood, injury or truncated education without qualifications can compromise a successful transition into adulthood (Moffitt, Caspi, Harrington, & Milne, 2002). While these 'snares' were identified by Moffitt in her original 1993 publication, follow up studies have revealed an increasing number of adolescents that appeared to have curbed their offending but were instead engaging in intermittent offending (Burt & Neiderhiser, 2009). Other studies show mixed outcomes for adolescence-limiteds. They have been found to have indistinguishable work records from those without convictions and better relationships with spouses than chronic offenders (Burt & Neiderhiser, 2009). However, while their criminal records may have ceased many years earlier, according to self reports they were still committing criminal acts, such as stealing from their employer (Nagin, Farrington, & Moffitt, 1995).

1.4.2   Life-Course-Persistent Offenders (LCP) / Early Starters

Life-course-persistent offenders are a smaller group that start offending early with their hallmark trait being a continuation of offending throughout their life course (Moffitt, 1993a, 2003; Patterson, et al., 1991). They consist almost entirely of boys (5%) although some studies suggest a prevalence among females of 1-2% (Stattin & Magnusson, 1989). The early starter's underlying disposition towards antisocial behaviour emerges through a variety of escalating offences as age and social circumstances provide new opportunities (Moffitt, 1993a).

Unlike late starters, the life-course-persistents antisocial behaviour is significantly influenced by genetics (Eley, et al., 2003; Lahey, Waldman, & McBurnett, 1999; Rutter, Giller, & Hagell, 1998). Life course persistent parents are more likely to have children that follow in their footsteps. This group also inherits more neuropsychological deficits, has impaired executive functioning, difficult temperament, inattention, impulsivity or hyperactivity and lower verbal intelligence (Chung, et al., 2002; Hirschi & Hindelang, 1977; Moffitt, 1990, 1993a; Moffitt & Caspi, 2001). These individuals experience a range of developmental problems that affect their cognitive and motor development and personality traits. They may be clumsy, awkward, overactive, inattentive, irritable, impulsive, hard to keep on schedule, experience developmental milestone delays, have poor verbal comprehension, and an inability to express themselves or learn new things (Chung, et al., 2002; Moffitt, 1993a; Moffitt & Silva, 1988).

When individuals with these deficits interact with a dysfunctional social and family environment of poverty, disrupted family bonds, poor parental monitoring and discipline and impaired family problem solving, a socialization process is created where the child learns that antisocial behaviours have an adaptive value.

The troubled formative experiences of the life course persistent offender results in a long term predisposition towards offending that persists throughout the individual's life (Fergusson, Horwood, & Nagin, 2000). These early individual differences and escalating problems that increase the likelihood of continued criminality, result in fewer opportunities to learn conventional prosocial behaviours. With increasing peer and societal rejection and only basic educational skills, breaking the chain of antisocial

behaviour and making the transition into conventional adult roles becomes increasingly difficult (Krohn, et al., 2001). Antisocial behaviours will dominate interactions resulting in offending, problems with employment and victimization of intimate partners and children (Moffitt, et al., 2002). The life course persistent offender's prognosis is particularly pessimistic.

In summary, adolescent limiteds are developmentally indistinguishable from their non-offending peers as their offending is attributable to social processes. Life course persistent offenders however have a genetic predisposition that is compounded by dysfunctional early life experiences.

1.4.3   Other Offending Trajectories

While Moffitt's dual pathway typology acknowledges the heterogeneous causal development of antisocial behaviour, others claim there is evidence of additional trajectory groups or subgroups. Fergusson and colleagues labelled a group of 12-18 year olds *moderate offenders* that showed relatively stable levels of low level offending with a slight increase during adolescence (Fergusson, et al., 2000). Nagin identified a *low rate chronic* group whose offending was less severe and less frequent than life course persistents, although their offending continued throughout the period they were tracked e.g. at least until 32 years. Other offending trajectories were identified by Moffitt and colleagues *recoveries* (Moffitt, et al., 1996), and Chung and colleagues, *escalators* and *desisters* (Chung, et al., 2002).

While identifying the behaviours and traits that are risk factors of later offending is essential, determining at what developmental stage they first emerge is equally important. However early identification needs to be balanced with accurate identification, as many of the young people that appear to be at significant risk of continued and or escalated offending actually desist without any formal intervention (Moffitt, 1993a). The increasing acceptance of Moffitt's AL and LCP trajectories is acknowledged by the distinction between children diagnosed with conduct disorder of childhood onset v adolescent onset, becoming a feature of the diagnostic criteria in the DSM–IV-TR (Association, 2000). This has encouraged researchers to step away from historical behavioural predictors that can be more transitory and instead explore more underlying constitutional or stable traits, particularly those underlying the LCP offending

trajectory and psychopathic offenders.

1.5 Life-Course-Persistent Offenders and Psychopathic Offenders

The severe, chronic and aggressive antisocial behavioural characteristics of LCP offenders has caused researchers to draw comparisons with the construct of adult psychopathy (Frick & Marsee, 2006). Moffitt and colleagues refer to the LCP offender as possessing the psychopathic traits of alienation, impulsivity and callousness with a suspicious interpersonal style (Moffitt, et al., 1996). These individuals that also possess an underlying lack of empathy for those affected by their offending and a callous and unemotional personality style, have been described as *psychopathic*.

1.6 Psychopathic Offenders

Psychopathy is a personality disorder characterised by a lack of remorse, manipulativeness, egocentricity, superficial charm, impulsivity, unreliability, deceitfulness and shallow affect (Blair, Peschardt, Mitchell, & Pine, 2006; Cleckley, 1941; Hare, 2003). Offenders that commit particularly severe and violent antisocial acts are more likely to be psychopathic (Viding, 2004). Psychopathic offenders make up approximately 15-30% of the prison population (Blair, et al., 2006). As well as being more likely to commit a violent offence, psychopaths also commit a disproportionate amount of crime (50% more than non-psychopathic offenders) with greater stability (Lynam, 1997) and show greater criminal versatility (Viding, 2004). One of the most important elements of psychopathy in adult samples is its utility for predicting antisocial outcomes particularly violence and aggression (Serin, Peters, & Barbaree, 1990).

Factor analytic studies have supported three primary dimensions of psychopathy: callous unemotional (CU) traits, egocentricity and impulsivity (Frick, Bodin, et al., 2000; Salekin & Frick, 2005). CU traits has been labelled 'the deficient affective experience'. Flat affect is evident by a distinctive absence of guilt and a constricted display of emotion. Those scoring high on CU traits have a diminished reactivity to aversive and emotionally charged stimuli (Patrick, Bradley, & Lang, 1993) and are not distressed by

how their antisocial behaviours affect others (Loney, Frick, Clements, Ellis, & Kerlin, 2003). Their interpersonal style is evident by an underlying lack of empathy with an outlook that others only exist for their own personal gain.

The psychopath's egotistical personality style is evident from their conning and manipulative behaviours towards others. They maintain an arrogant self righteous conviction with core features including frequent lying, denial and avoidance of blame (Edens, Skeem, Cruise, & Cauffman, 2001; Frick & White, 2008). Psychopaths have a preoccupation with obtaining rewards (Lynam, Caspi, Moffitt, Loeber, & Stouthamer-Loeber, 2007), and the violent acts committed by psychopaths are more instrumental and 'cold blooded' than the violence committed by non psychopathic offenders (Woodworth & Porter, 2002). Furthermore, there is little regard for the negative consequences of their aggressive or antisocial behaviours (Frick, et al., 2003a).

Finally the psychopath is an impulsive risk taker with little planning or foresight (Christian, Frick, Hill, Tyler, & Frazer, 1997). Their focus is dominated by what is immediate, concrete and personally relevant (Salekin & Frick, 2005). There is significant evidence that psychopathic individuals are often impaired on neuropsychological measures of executive functions, including sustained attention and concentration, planning, and inhibiting impulsive behaviours (Lynam, 1997). With low behavioural inhibition and insensitivity to prohibitions and sanctions, the primary focus is on potential rewards or gain and instant gratification (Christian, et al., 1997).

Unlike the behavioural criteria for Conduct Disorder (CD) and Antisocial Personality Disorder (ASPD), the psychopathic personality has both emotional and behavioural components with the emotional component attracting a lot of recent attention (Blair, et al., 2006). With evidence from a longitudinal study over a four year period of the stability of psychopathic traits prior to adulthood (Frick, Kimonis, Dandreaux, & Farell, 2003c), there have been attempts to extend the construct of psychopathy to understand antisocial behaviour in youth (Frick, Stickle, Dandreaux, Farrell, & Kimonis, 2005). Given the chronic and severe nature of antisocial behaviour of the child onset group, it has been suggested that within this subgroup an early form of psychopathy could be found (Lynam, 1996). The components that

have attracted the greatest interest have often been categorised as CU traits including affective (absence of guilt, constricted display of emotion) and interpersonal (failure to show empathy, use of others for one's own gain) characteristics.

1.7   Callous Unemotional Traits

While CU traits is a critical dimension of psychopathy, researchers have highlighted the risks of focussing on a measure that underlies psychopathy and applying it directly to youth. It is argued, is a highly pejorative label that implies a biologically based and, what some consider to be, an 'untreatable condition' (Quay, 1987; Steinberg, 2002). Although Salekin conducted a review of 42 psychopathy treatment studies and concluded there is little scientific basis for this claim (Salekin, 2002). Others have questioned if behaviours in youth are stable enough to be called traits. Psychopathic traits, e.g. irresponsibility, egocentricism, lack of planning and forethought, glibness, grandiosity, and lack of remorse, are believed to be normative and transient in youth as they move through adolescence (Frick & Marsee, 2006; Frick & White, 2008; Seagrave & Grisso, 2002).

Youth high on CU traits show a temperamental style that emphasizes positive aspects of using aggression and minimizes the negative consequences (Frick, 2006). They have a preference for dangerous or novel stimuli and seem to be less distressed by the effect of their behaviour on others (Frick, et al., 2003a). CU youth show a specific lack of reactivity to emotional stimuli that is not global but specific to negative emotional stimuli (Blair, Jones, Clark, & Smith, 1997) and is indicative of defects in affect processing (Lynam & Gudonis, 2005). Youth with CU characteristics have been described as exhibiting low fearfulness (Frick & Dickens, 2006), low behavioural inhibition (Fanti, Frick, & Georgiou, 2009), low harm avoidance (Cloninger, 1987), and high daring (Lahey & Waldman, 2003). However adolescents high on CU traits have been found to not differ on impulsivity (Frick, et al., 2003a) or ADHD symptoms (Christian, et al., 1997).

Several studies have linked this temperamental style with lower scores on measures of conscience development (Frick & Morris, 2004), impaired moral reasoning and lower empathic concern (Frick,

2004). The roles typically played by guilt, anxiety and punishment in moderating behaviour appears to be impaired for those high in CU traits (Frick & Dickens, 2006). Youth with low levels of temperamental fear are less likely to experience significant distress when reprimanded, potentially impeding their ability to develop an internalized sense of empathy and guilt (Pardini, 2006).

Frick argues that for a predictor of serious future offending to be valid, it must show independence from general measures of antisocial behaviour (Frick & White, 2008). If a predictor is too similar to the outcome measure, as could be argued for past criminality or aggression, Frick claims incremental utility is limited and its ability to designate within a subgroup of antisocial youth is compromised (Frick & White, 2008). While the CU construct correlates with behavioural predictors of delinquency (r= 0.50 and r=0.55; p<0.001) (Christian, et al., 1997; Frick, Kimonis, et al., 2003c) its emphasis on affective and interpersonal characteristics makes it unique. Frick therefore suggests that by focusing on the presence of CU traits there is potential for differentiating youth that are at the greater risk of more serious and violent offending in a way that behavioural measures are unable to (Frick, 2004, 2006; Frick, Cornell, Barry, Bodin, & Dane, 2003c; Frick, et al., 2003a; Frick & Ellis, 1999; Frick & Marsee, 2006; Frick, et al., 2005). This belief is based on the premise that there are different causal processes operating for antisocial youth with and without CU traits.

A study by Christian, Frick and colleagues (Christian, et al., 1997) assessed a sample of 120 clinically referred children between six and thirteen with conduct problems. Using the Diagnostic Interview Scheduled for Children (DISC) they found children they labelled as the *psychopathic conduct problems* cluster (high on CU traits and more conduct problems) exhibited more symptoms of ODD and CD and had higher scores on the Aggression and Delinquency scales of the CBCL than those with conduct disorder but low on CU traits. However, despite differences in the expected directions, significance testing indicated no significant differences for the age of onset of the first CD symptom, police contacts, or status offence symptoms.

Using a non referred sample selected from 1,136 children Frick and colleagues created four subgroups of n=25 (mean age 12 years) using stratified random sampling based on gender, ethnicity and SES. This

sample has been the basis of at least five publications on CU traits (Frick, Bodin, et al., 2000; Frick, Cornell, et al., 2003c; Frick, et al., 2003a; Frick, Kimonis, et al., 2003c; Frick, et al., 2005). The four groups differed on CU traits and conduct problems with the first being in the top 25th percentile for both, the second below the mean for both, the third in the top 25th percentile for CU traits but below the mean for conduct problems and the fourth group in the top 25th percentile for conduct problems but below the mean for CU traits.

At a one year follow up children with conduct problems and CU traits were at greater risk of showing higher levels of proactive aggression and self reported delinquency, including even those who did not initially show significant conduct problems (Frick, Cornell, et al., 2003c). However when the initial level of conduct problems was controlled, the CU trait was, unexpectedly, ineffective in determining conduct problem severity. Since this is often cited as a critical indicator of future serious offending (Frick, et al., 2005; Loeber & Coie, 2001; Loeber, Green, Lahey, Frick, & McBurnett, 2000), the failure of CU traits to predict it may be significant.

Using the same sample (Frick, et al., 2003a) explored CU traits and developmental pathways to severe conduct problems. The group highest on CP and CU traits had the highest level of dysregulation (based on measures of impulsivity-hyperactivity), a lack of behavioural inhibition and a decreased sensitivity to cues of punishment, however these results can only be used to suggest the potential of a distinct developmental pathway to the development of severe antisocial and aggressive behaviour. The predictive validity of CU traits for antisocial behavioural measures was not tested.

This same sample was followed and assessed in years two, three and four making it one of the few longitudinal studies on CU traits. Those high on both conduct problems and CU traits showed the highest rates of conduct problems, actual and threatened violence against others, self reported delinquency and parent reported police contacts compared to the three other groups across all annual assessments.(Frick, et al., 2005). However the two conduct disordered groups differed on initial severity of conduct problem symptoms and this was not controlled. While this was justified by stating the different starting points reflected the actual differences in the severity of behaviour over time, this approach is inconsistent with

the approach taken by Frick and colleagues in 2003 and it is likely the results would have been significantly different had the initial severity of conduct problems been controlled. Nevertheless, overall, the findings across four measures and a four year time period are significant in supporting the predictive validity of CU traits within a group of antisocial youth.

Overall, these findings provide enough support to explore the predictive validity of CU traits and the potential of combining two variables to predict later antisocial behaviours, a notion that will be elaborated on below. Evidence from (Frick, et al., 2005) also supports the utility of using CU traits to predict antisocial behaviour over an extended follow up period. This is consistent with findings that juvenile psychopathy is fairly stable across adolescence, despite the numerous developmental changes taking place (Lynam, et al., 2009).

While the findings highlighted above generally support CU traits as a predictor of offending, the strength of this relationship has often been found to be modest. A study by Hemphill and colleagues found impulsivity not CU traits to be the strongest predictor of the three psychopathic dimensions (Hemphill, Hare, & Wong, 1998). A further study by Frick and colleagues (Frick, Bodin, et al., 2000) also assessed the three psychopathic dimensions using a sample of 160 children referred to an outpatient mental health clinic that were compared to a non referred sample of over 1,100 children. CU traits were actually only weakly associated with oppositional defiant disorder (ODD) and CD when controlling for narcissistic traits and impulsivity, both of which had a stronger association with ODD and CD.

Nevertheless, there is a growing number of studies supporting the utility of CU traits and its association with serious offending (Barry, et al., 2000; Bryan, et al., 2005; Burke, Loeber, & Lahey, 2007; Essau, Sasagawa, & Frick, 2006; Fanti, et al., 2009; Frick, 1998b; Frick, Cornell, et al., 2003c; Frick, et al., 2003a; Frick & White, 2008; Kimonis, Frick, & Barry, 2004; Loney, et al., 2003; McLoughlin, Rucklidge, Grace, & McLean, 2008; Munoz, Frick, Kimonis, & Aucoin, 2007; Pardini, Lochman, & Powell, 2007; Viding, Frick, & Plomin, 2007; Viding, Jones, Frick, Moffitt, & Plomin, 2008; Viding, Simmonds, Petrides, & Frederickson, 2009) and the validity of the Inventory of Callous Unemotional

Traits (Frick, 2003; Kimonis, et al., 2008) justifying further exploration of its predictive validity, especially of delinquent youth.

1.8   Combining Predictors and Prediction Models

The notion of combining risk factors to predict offending or delinquency is not new, with early models evident more than 80 years ago (Putnins, 2005). These initial models were derived in an effort to predict recidivism. An early validated example is the Burgess Method that was first used to distinguish between parole violators and nonviolators (Farrington, 1985). The relevant predictive variables were scored either zero or one, depending on whether the individual fell into a category with an above average or below average delinquency rate. All items were equally weighted and summed. The Burgess method generally offers an improvement over the best single predictor, although is silent on the number of predictors to be chosen and what to do about predictors that are closely intercorrelated (Farrington, 1985).

The Glueck method from the 1950's study by Glueck and Glueck is similar to the Burgess method although more complex (Glueck & Glueck, 1950). The method usually permits a maximum of five variables, which are ideally mutually exclusive, although some flexibility is tolerated and weightings are based on the percentage of delinquency for that group for that variable. For example, for the variable troublesome, if the percentage of individuals in the non delinquent group that were troublesome was 10%, then their total would be incremented by 0.10, whereas if the percentage of individuals in the delinquency group that were troublesome was 60%, then their score would increase incrementally by 0.60. Kirby (as cited in(Farrington, 1985) reported that in a trial using the Burgess and Glueck methods with the same sample, prediction scores correlated 0.90.

More recently a number of more powerful techniques have been proposed and used to analyse predictive relationships and construct predictive models. These include multiple linear regression (including stepwise hierarchical regression), logistic regression, clustering methods, multidimensional contingency table analysis and automatic interaction detector analysis (Gottfredson, 1987; Putnins, 2005). These have arisen from criticism that the less complex models derived from the Burgess and Glueck methods are too

subjective and arbitrary. A strength of multiple regression is its ability to determine the unique and exact contribution of several independent variables simultaneously. The increasing availability of statistical packages and computer software (e.g. SPSS) has increased the access and the popularity of more sophisticated methods, especially multiple regression. Caution is required with sophisticated statistical packages such as multiple linear regression however as there is a temptation to place undue emphasis on chance relationships in the data. This highlights the importance of validating a predictive regression model with different samples to determine its generalizability.

Given the complexities of predicting criminality highlighted above, and the importance of optimally predicting those most likely to serious offend, there is obvious justification in attempting to combine predictors (Koops & de Castro, 2004). The key consideration is managing the risk of placing too much weight on the results of sophisticated methods, e.g. multiple regression. With this in mind we consider the combination of CU traits and aggression to predict delinquency.

1.9   Combining Callous Unemotional Traits and Aggression to Predict Delinquency

In 1998 Frick emphasized the importance of exploring how various causal agents might interact (Frick, 1998b). He proposed that CU traits might contribute additional predictive validity when combined with other risk factors although his focus at that point was with impulsivity. Frick believes that the construct of CU traits differs from aggression and previous criminality and the other more behavioural predictors in that it focuses on interpersonal and affective factors.

Frick and colleagues in the studies mentioned above combined CU traits with conduct problems. Their findings generally indicated that individuals high in both were more predictive of later antisocial behaviours, especially over a four year follow up period than either factor alone (Frick, Kimonis, et al., 2003c; Frick, et al., 2005).

The only study to date to combine aggression and callous unemotional traits to predict youth at risk of future serious offending is a manuscript *in press* by McLoughlin and colleagues (McLoughlin, et al.,

2008). McLoughlin and colleagues wanted to determine if aggression in combination with CU traits could be used to identify a subgroup of particularly anti-social youths. They found that a group of 20 youth who were high on both CU traits and aggression were significantly different, on a number of dimensions, from a control group (n=74) of youth who were not high on either of these measures. Specifically the high CU / Aggression group were significantly higher on psychopathic traits measured by the APSD, narcissism, impulsivity, social problems, physical and verbal aggression, loneliness, hyperactivity and inattention, and lower on emotional liability. Their parental monitoring was significantly higher as was the amount of inconsistent discipline. The two groups did not differ significantly on demographic variables including household income, parental qualifications and marital status of the primary caregiver (McLoughlin, et al., 2008). Many of these are risk factors for later offending, as discussed above, but the study did not include outcome data to determine the validity of combined aggression and CU traits in predicting delinquency.

1.10   The Purpose of This Study

The present study will follow up the groups studied by McLoughlin et al, and collect data on later delinquency. Specifically, the frequency and seriousness of disciplinary incidents while at school will be assessed for each of the participants in the period following McLoughlin et al's assessments of Aggression and CU. The primary purpose is to determine whether combining assessments of CU and aggression results in better predictive accuracy with respect to later disciplinary incidents than could be achieved with either predictor alone. Aggression as a behavioural variable is consistent with the view that the best predictor of a behaviour are prior assessments of the same or a closely related behaviour (Bloom, 1964). Behavioural measures however have been criticized for their inability to designate severe, aggressive and chronically antisocial youth (Frick, Barry, & Bodin, 2000). CU traits in comparison is a measure based on interpersonal and affective features that Frick claims to be effective in differentiating low risk offenders from serious and chronic offenders within an antisocial group (Frick, et al., 2005). It is

hypothesized, based on findings from Frick and colleagues, that the combination of elevated scores on both CU traits and aggression will be more predictive than either aggression or CU traits alone.

Hypothesis One: The combination of elevated scores on both CU traits and aggression will be more predictive than either aggression or CU traits alone.

Because the work of Frick and colleagues suggests specifically that CU traits may be effective in differentiating low risk from high-risk offenders *within an antisocial group*, we may further hypothesize that the relationship between CU traits and antisocial outcomes will be moderated by aggression. The relationship between CU traits and disciplinary problems will be stronger among those high on aggression than among those low on aggression.

Hypothesis Two: The relationship between CU traits and antisocial outcomes will be moderated by aggression.

The secondary objective of this study is to determine what other school related factors explain additional variance in predicting disruptive school behaviours. Consistent with the earlier review of risk factors, it is expected that academic performance will be negatively correlated with disruptive incidents. The literature indicates the relationship for extracurricular activity involvement is dependent on the school's level of resources. Given state funding for New Zealand schools is relatively consistent across all schools there is no reason to expect schools in this sample to be disadvantaged. Extracurricular involvement is therefore expected to negatively correlate with disruptive behaviours. Caregiver school involvement and other variables reflecting the participant's parental support are expected to be negatively correlated with disruptive incidents. Similarly, the peer delinquency literature would suggest that the number of prosocial and antisocial peers will be correlated with disruptive incidents (negatively and positively, respectively). Further, the literature reviewed suggests that truancy, and measures suggesting a lack of

parental support and responsibility (such as poor nutrition) will be positively correlated with school recorded disruptive incidents. The present research will ask first whether these expectations are confirmed, and second, whether the addition of these factors to Aggression and CU traits improves upon the prediction of delinquency. Stepwise hierarchical linear regression will be used to create a model that identifies and combines the predictive independent variables to explain as much variance as possible.

CHAPTER TWO

2.0   Method

2.1   Participants

The sample for this research is the same sample of 118 children used by McLoughlin and colleagues (McLoughlin, et al., 2008). The 69 (59%) boys and 49 girls ranged from 10.5-12.5 years old (mean 10.79, standard deviation 0.50) when the longitudinal study commenced in 2007 (Time 1). They were students at nine Christchurch decile 1-3 primary schools, including a residential school for boys with severe behaviour difficulties. Although 126 participants were originally recruited, six participants did not complete both the Inventory of Callous Unemotional Traits (ICU) and Child Behaviour Checklist (CBCL; either parent or teacher) scales, one participant was expelled from their current school and was not attending a school when school data was collected, and one participant relocated to Australia with no forwarding contact details, reducing the sample for the present study to 118. From the history questionnaire taken at Time 1, the participants were categorized as 50.8% New Zealand European / Pākehā, 32.5% Māori, 10.3% Pacific Island, and 6.3% other ethnicities. All of the participants provided written consent for their assessment test results to be accessed and used as part of this longitudinal study. Caregivers of participants were gifted retail vouchers to complete the CBCL and ICU for their child.

2.2   Time 1 Measures

The following measures were collected by McLoughlin et al prior to the present study.

2.2.1   Inventory of Callous-Unemotional Traits

The ICU (Frick, 2003) was developed to provide an efficient and reliable assessment of CU traits in youth (see Appendix C). Another scale, the Antisocial Process Screening Device (APSD), also has a CU dimension but the ICU expands on the four APSD items that primarily contributed to it, with 24 items

making up the questionnaire. Each of the 24 items are scored on a four-point Likert scale ranging from 0 (not at all true) through to 3 (definitely true). Scores range from 0 to 72, with higher scores representing higher levels of CU traits. There are questionnaires for children to self report, and teacher and parent questionnaires.

The ICU is a relatively new measure of callous unemotional traits and so reliability and validity data on the psychometric properties is limited. However, a community sample of adolescents (between the age of 13 to 18 years, n=1443) supported the reliability and validity of the ICU (Essau, et al., 2006) as did a sample of juvenile offenders (aged between 12 and 20, n=248) (Kimonis, et al., 2008). Both studies also found support of a three-factor structure of the ICU; unemotional, callousness, and uncaring.

The ICU was completed in 2007 (Time 1) as part of the study by McLoughlin (2010) by both the child's teacher and parent / caregiver, but the data used in the present study was from the caregiver questionnaire as they were judged to be a more accurate assessor of a child's affective and interpersonal traits than teachers, who typically have less opportunity to observe these qualities. Measurement of CU traits using the ICU has been found to have low interrater reliability e.g. parents v teachers (Frick & White, 2008).

2.2.2   Child Behaviour Checklist (CBCL) - Aggression Scale

The Child Behaviour Checklist (6-18 years) is a widely used school age assessment to determine a child's problem behaviours and competencies. One of the eight subscales of the CBCL is aggression. The aggression score for the Teacher Report Form (TRF) is derived from 20 of the 120 items, and for the parent report form (CBCL) from 18 of the 120 items. Both checklists have Likert scales ranging from 0 (not true as far as you know) through to 2 (very true or often true). Scores for the aggression subscale range from 0 to 36 for the parent form and 0 to 40 for the teacher form, with higher scores representing higher levels of aggression. Raw scores from the parent and teacher questionnaires are then converted to standardized T scores ranging between 50 and 100. (The relevant items of both the parent and the teacher forms that make up the aggression subscale are detailed in Appendices A and B).

Reliability and validity for the Aggressive subscale are very high (Achenbach & Rescorla, 2001). Content validity and criterion related validity for the aggression subscale was tested thoroughly and in both cases demonstrated significant discrimination between demographically matched referred and non-referred children. Construct validity was supported with significant associations with other instruments including Connors and DSM criteria by genetic and biochemical findings, and by predictions of long term outcomes (Achenbach & Rescorla, 2001).

For the present sample, the CBCL was completed by both parents and caregivers, and the two assessments were moderately highly correlated (r=0.572, n=107). The scores used for the present research were the higher of the two recorded T scores. This is consistent with the approach taken by Frick and colleagues with the APSD (Frick, O'Brien, Wootton, & McBurnett, 1994) and 2005 study (Frick, et al., 2005). The logic underlying this is that a single informant may not see the child in multiple environments, and it is likely that some children will refrain from or mask aggressive behaviours in some situations. It could also be that there is motivation to underreport socially undesirable behaviour like aggression. Furthermore aggressive acts or externalizing behaviours, unlike internalizing behaviours, are more easily identified with less opportunity for ambiguity or misinterpretation. The highest total parent or teacher T scores were used rather than the highest score for each item, given, as mentioned, the questionnaires differed slightly for parents and teachers.

2.2.3   Dependent Variables – CU traits and Aggression

The raw data scores from the ICU and Aggression scale of the CBCL created two continuous independent variables Aggression (AGG) and CU Traits (CU).

2.3   Procedure

Additional data were collected for the present study, as follows, in 2008-10.

2.3.1 School Records Data Collection

Each of the 118 participants and their primary caregiver had provided consent for information to be collected from their school records and from their teacher. Copies of these consent forms are included as appendixes I, J, K, L & M. While 22 of the child participants had not entered new schools in 2008 (Time 2 of the longitudinal study), the remaining 96 had either gone on to an intermediate school or started high school. It was therefore necessary to contact and obtain consent from 24 new school principals and teachers of the participants that had changed schools. Three of the original primary schools continued to have participants during 2008. Letters used in this process are included as appendices E and F.

Teachers were requested in person and or by phone and email to complete the four page 'School Records - Youth Longitudinal Study' form (appendix H) based on terms one and two (29 January to 4 July) of 2008. This form required teachers to respond to questions about academic ability, disciplinary problems, school referrals (behaviour or learning needs), school attendance, extracurricular activity involvement, peer relationships, caregiver involvement, and nutritional responsibilities (if the student has breakfast and arrives with a school lunch). Questions about disruptive behaviours included, if that behaviour involved aggression, if the incident was considered 'mild', 'moderate' or 'extreme', the consequence of the incident, and the category that best described the incident, e.g. violation of school rules. Space was provided to detail the five most serious incidents and then there was an opportunity to indicate the number of additional incidents over and above five.

Teachers were also asked to provide photocopies of any and all formal school documents that detailed the following

- Academic achievement;
- Any disruptive behavioural incidents and the consequence including any referral based on behaviour, learning needs or neglect;
- School attendance and any unexplained absences and
- Extracurricular activity involvement.

This information was collected during June 2008 to January 2010. Unfortunately, copies of formal school documents and / or school records were difficult to obtain, with records collected for only 31 (26.3%) participants with recorded disruptive incidents, 29 (24.6%) academic achievement, and 48 (40.7%) for school absences. Where formal school documents were available this information was used to confirm the information collected from the 'School Records – Youth Longitudinal Study' form. Where a conflict existed the more formal school documents were considered more accurate than the information provided by teachers entered into the 'School Records – Youth Longitudinal Study' form.

Two dependent variables were created from the data collected on the student's history of engaging in school disruptive incidents. The first variable included those involved in all disruptive incidents (Total All Disruptive Incidents) and the second only those involved in incidents that teachers classified as 'serious'. (Total Serious Disruptive Incidents Only). See below (Figures 3.1 – 3.2) for the transformation of these variables to create *Any Disruptive Incident* (ADI) and *Serious Disruptive Incidents Only* (SDIO).

2.3.1 Data Treatment and Analysis

Data analysis was completed using the Statistical Package for the Social Sciences (SPSS 17.0) and STATISTICA 9. Analysis included descriptive statistics, including tests for normality for independent (Time 1) and dependent (Time 2) variables, and Pearson bivariate correlations between the dependent and independent variables and the inter-correlations between each.

Variables that indicated evidence of multicollinearity were mean centred (creating AGG Mean Centred and ICU Mean Centred) and multiplied (creating AGG ICU mean centred) (West, Aiken, & Krull, 1996).

Hierarchical multiple linear regression was used to determine the unique contribution of aggression and CU traits, and to test for a moderator effect of CU traits. Stepwise Linear Regression was used to build a predictive model to explain as much variance as possible for each dependent variable (ADI and SDIO).

Statistica 9 was used to determine explore 'best subset' models for both ADI and SDIO.

When variables contained missing data the SPSS option selected was to exclude cases pairwise. In analysing correlations and the change in R^2 with hierarchical multiple regression models, p values were considered statistically significant at levels below 0.05* and 0.01**.

CHAPTER THREE

3.0   Results

3.1   Descriptive Statistics

3.1.1   Callous Unemotional Traits & Aggression

Two new dichotomous variables were created from the ICU and AGG raw scores, with participants above the 75th percentile (>= 28 ICU, n=28 and >= 64 AGG, n=29) categorised as 'high' and those below the 75th percentile (<28 ICU, n=90 and <64, n=89) categorized as low. Table 3.1 gives the mean and standard deviation for CU traits and AGG raw scores.

Table 3.1. ICU & AGG

Independent Variables	N	Mean	SD	Min	Max	Poss Max
CU Traits (ICU) parent raw score	118	20.53	10.39	3	48	72
AGG (CBCL) Highest parent/teach. raw score	118	57.96	10.26	50	94	100

3.1.2   Callous Unemotional Traits and Aggression Combined

The third dichotomous variable created was AGG & CU Traits 75 (AGG ICU 75) that divided the sample into participants in the top 75th percentile for both aggression (using the higher of the scores from parent and teacher) and callous unemotional traits (parent data only), categorised as 'high', and the remainder, categorised as 'low'. The high group totalled 17 participants (14%), 14 of whom were male, and the 'low' group comprised 101 participants, 54 of whom were male.

3.1.3   Disruptive Incident Severity & Type

There were approximately 153 recorded disruptive incidents, although this is an estimate of the overall number. Recall that information was only collected on the first five incidents for each youth, and teachers were asked to estimate the total number of additional incidents over and above five. It was therefore not possible to categorize those additional estimates as mild, moderate or serious. For this reason, the total of the means for these three categories does not equal the mean for any disruptive incident.

The column *% of sample* indicates the percentage of the sample that had at least one recorded incident of

this severity. The mean is the average number of incidents of that severity across the whole sample. Table 3.4 shows that as the seriousness of disruptive incidents increases, such incidents became increasingly rare. However, even for the most serious incident, more than 10% of the sample had one or more recorded over the time period concerned. Overall, there were disciplinary incidents recorded for approximately one quarter of the sample.

Teachers were requested to categorise each disruptive incident using the categories given in the bottom four rows of Table 3.2. These categories were based on the diagnostic criteria for CD in the DSM IV-TR.

Table 3.2. Disruptive Incident Severity and Type

Dependent Variables	N	% of sample	Mean	SD	Min	Max
Mild Disruptive Incident	118	16.1%	0.50	1.90	0	12
Moderate Disruptive Incident	118	14.4%	0.31	0.86	0	4
Serious Disruptive Incident	118	11.0%	0.17	0.62	0	5
Any disruptive incident (mild/mod/serious)	118	25.4%	1.30	3.51	0	15
Violation of school rules	118	19.5%	0.60	1.93	0	13
Stealing or vandalism	118	4.2%	0.04	0.20	0	1
Intimidation or physical assault	118	15.3%	0.30	0.82	0	5
Other disruptive incident	118	0.8%	0.01	0.09	0	1

3.1.4 Aggressive Disruptive Incidents

Any recorded incident that contained aggression was further categorised as to whether the aggression was proactive, reactive or both. Of the 30 participants involved in disruptive incidents 18, (60%) of those participants engaged in at least one aggressive act. Proactive aggression was more frequent than reactive with very few participants engaging in both 3.4%.

Table 3.3. Aggressive Disruptive Incidents

Dependent Variables (Time 2)	N	% of sample	Mean	SD	Min	Max
Incident included proactive aggression	118	12.7%	0.27	0.83	0	5
Incident included reactive aggression	118	9.3%	0.17	0.57	0	3
Incident included proactive & reactive aggress.	118	3.4%	0.05	0.29	0	2

3.1.5 Disruptive Incident Consequence

Teachers also recorded the consequences imposed for each disruptive incident. In some cases, these were referrals to external agencies (social service providers, govt. departments) in which case the consequences were categorised according to whether they concerned behaviour, learning needs, or neglect. While the

most common outcome was a warning, more than 10% of the sample were suspended for a disruptive

behaviour at least once, suggesting serious incidents resulted in serious consequences.

Table 3.4. Disruptive Incident Consequence

Dependent Variables	N	% of sample	Mean	SD	Min	Max
Incident resulted in warning	118	16.1%	0.49	1.70	0	10
Incident resulted in loss of privileges	118	11.9%	0.25	0.87	0	5
Incident resulted in detention	118	7.6%	0.19	1.06	0	10
Incident resulted in suspension	118	10.2%	0.15	0.55	0	4
Incident resulted in 'other' consequence	118	6.8%	0.08	0.30	0	2
Incident resulted in agency refer. – behaviour	118	13.6%	0.29	0.91	0	5
Incident resulted in agency refer. - learn needs	118	11.0%	0.14	0.44	0	2
Incident resulted in agency refer. - neglect	118	11.9%	0.23	0.77	0	5

3.1.6 Disruptive Incident Distribution

Thirty of the sample (25.4%) including two females, were involved in at least one disruptive incident

during Terms 1 and 2 of 2008. The distribution of disruptive incidents was examined for normality

before further analysis was attempted, and is graphed below (a). Given the uneven distribution the

number of incidents was collapsed into four groups as show below (b) and a new variable, "All

Disruptive Incidents" (ADI) was created.

Figures 3.1. Total All Disruptive Incidents (Raw Scores) Transformation
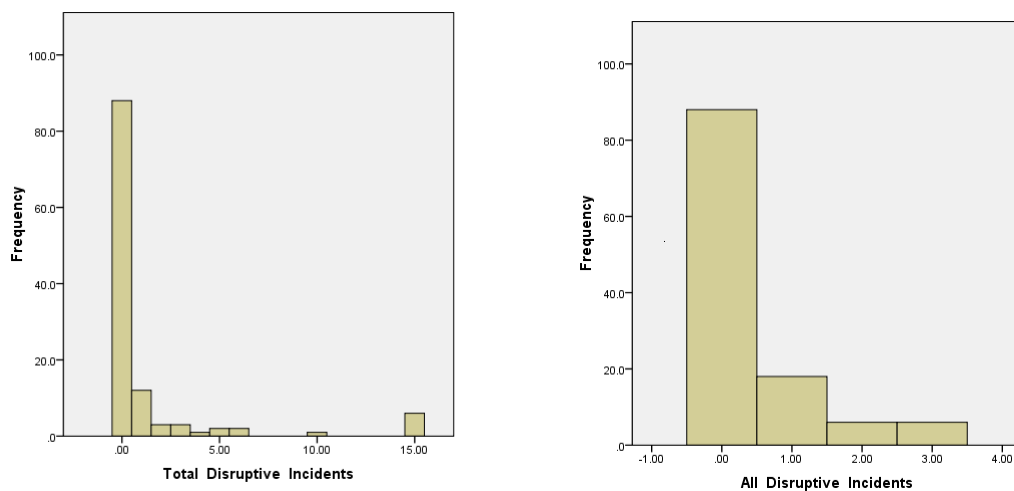
a. Total All Disruptive Incidents (Frequency)
N = 118, Mean 1.30, SD   1.50

b. All Disruptive Incidents (Frequency) (ADI)
N=118, Mean= 0.41, Std. Dev. 0.81
 0= no incident   2= 4-10 incidents
 1= 1-3 incidents   3= 11+ incidents

Thirteen of the sample (11.0%) including two females, were involved in 'serious disruptive incidents'.

The distribution of the participant's numbers of serious disruptive incidents was also examined for normality, and is graphed below. Again given the uneven distribution the number of incidents was collapsed into three groups as show below, a new variable, "All Disruptive Incidents" (ADI), was created.

Figures 3.2. Total Serious Disruptive Incidents (Raw Scores) Transformation
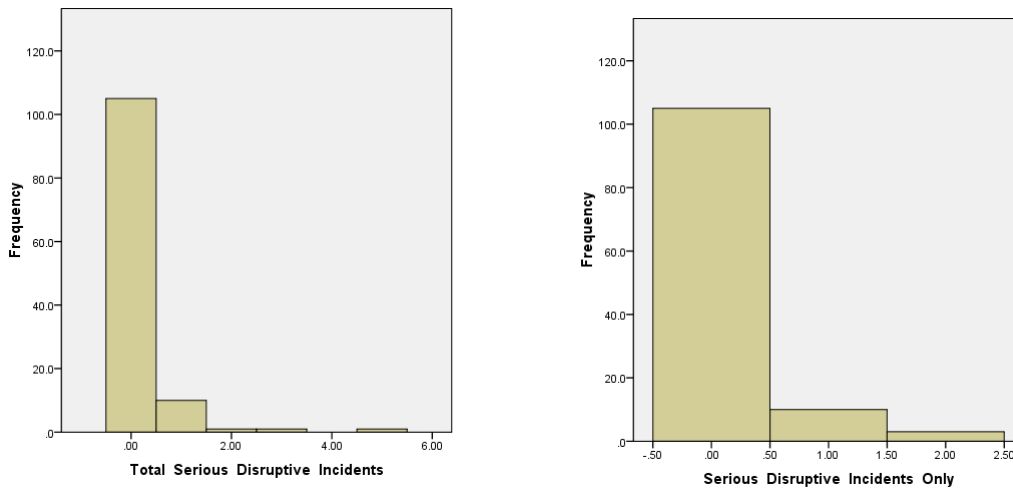
Total Serious Disruptive Incidents (Frequency)
N = 118, Mean = 0.17, SD= 0.62

Serious Disruptive Incidents Only (Frequency)
N = 118, Mean= 0.14, Std. Dev. 0.41
0= no serious incident,   1= 1 serious incident,
2= 2+ serious incidents

3.1.7   Academic Performance

For academic performance teachers rated participants on a 5 point Likert scale using same aged peers as a benchmark. The scale ranged from *more than 2 years delayed* to *more than two years ahead* and data was collected on their reading, ability to communicate verbally, ability to listen and understand, mathematical ability and general academic ability across all subjects. With a rating of *three* indicative of the student performing at the level of same aged peers, a mean around three was expected for each category and this was reflected in the data.

Table 3.5. Academic Performance

Independent Variables -	N	Mean	SD	Min	Max
Reading	118	3.12	1.13	1	5
Verbal Communication	118	3.17	0.87	1	5
Verbal Comprehension	118	3.14	0.86	1	5
Mathematics	118	2.83	0.88	1	5
General Academic Ability	118	2.97	0.94	1	5

3.1.8 School Absenteeism

Records from school administrators or teacher's personal classroom records were used to record each half day absence. Of those absences, any that were unexplained, or explained unsatisfactorily, were recorded as an unexplained absence. *Recorded absence* has been included for completeness, but is not expected to predict disruptive behaviours. The percentage of days that students were absent when that absence was unexplained was less than 1%.

Table 3.6. School Absenteeism

Independent Variables (Time 2)	N	Mean # of half days	Absent from school %	SD	Min	Max
Recorded absence	117	11.1	5.5%	12.68	0	82
Unexplained absence	108	1.7	0.9%	6.11	0	50

3.1.9 School Activity Involvement

Teachers were required to indicate if the participant had been involved, and to what extent, in non academic school activities or extracurricular activities (e.g. clubs, musical and cultural activities), sport and leadership positions. These three variables were totalled – 'total extra-curricular involvement'. While these questions were not relevant for the entire sample (note how the sample size changes across categories) the mean suggests participants were most involved in Sport, followed by Extracurricular Activities and Leadership.

Table 3.7. School Activity Involvement

Independent Variables	N	Mean	SD	Min	Max
Extracurricular Activities (not sport)	112	1.86	1.43	0	4
Sport	117	2.33	1.44	0	4
Leadership	108	1.49	1.45	0	4
Total Extra-curricular Involvement	118	5.44	3.50	0	12

3.1.10 Peer Relationships

The number of prosocial and antisocial friends for each participant was recorded with a maximum possible score of four. More students had prosocial peers although on average students had at least one antisocial peer. Total peers was created by adding antisocial peers to prosocial while, the fourth variable was the difference between prosocial and antisocial peers.

Table 3.8. Peer Relationships

Independent Variables	N	Mean	SD	Min	Max
Prosocial Peers	118	2.75	1.34	0	4+
Antisocial Peers	118	1.19	1.28	0	4+
Total Peers	118	3.94	1.49	0	8+
Prosocial less Antisocial Peers	118	1.55	2.15	-4	4+

3.1.11 Caregiver School Involvement

Information about how involved the parent / caregiver is in their child's schooling was collected by a range of specific questions targeting opportunities for parents to demonstrate their interest. A Likert scale (0 – 'Never/Rarely', 1 – 'Sometimes', 2 – 'Often') was used. Some categories were not applicable for some participants so responses were not recorded for all 118 participants for each variable. The range of means from 0.38 to 1.45 indicated the ability of questions to represent caregiver interest varied considerably.

Table 3.9. Caregiver School Involvement

Independent Variables	N	Some Involvt	Mean	SD	Min	Max
Attends parent teacher interviews	111	80.2%	1.45	0.81	0	2
Attends school meetings	96	61.5%	0.99	0.88	0	2
Phones or visits teacher	110	56.4%	0.78	0.78	0	2
Attends school events	102	67.6%	1.05	0.84	0	2
Volunteers to assist with school events	101	25.7%	0.38	0.70	0	2
Checks homework	95	67.4%	1.11	0.87	0	2
Assists with homework	88	65.9%	1.02	0.84	0	2
Total	118	89.0%	5.78	4.27	0	14

3.1.12 Nutritional Responsibilities

Information about whether or not the participant had breakfast before coming to school and if he / she then arrived with or without a school lunch was collected and aggregated. A score of one indicated occasionally missing a meal, and two regularly missing a meal, or occasionally missing both, three was regularly missing one and occasionally the other, and four regularly missing both. For 10 of the sample this question was not answered or not relevant (e.g. the student was boarding at their school, with parents not involved in meals).

Table 3.10. Nutritional Responsibilities

Independent Variables	N	Missing at least one meal	Mean	SD	Min	Max
Breakfast / Lunch	108	18.5%	0.40	0.97	0	4

3.2   Statistical Analysis

3.2.1   Aggression and CU Traits Predicting ADI & SDIO

Correlations were computed for raw aggression and CU scores versus each of the two measures of school delinquency (ADI and SDIO). These were all statistically significant, as shown in Table 3.14. Aggression had a very strong positive relationship with ADI, and a slightly lower, although still very strong, positive relationship with SDIO. The CU raw score was also positively correlated with both disruptive behaviour measures, although less strongly.

Table 3.11: Correlations Between AGG & ICU (raw scores) v ADI and SDIO

Pearson bivariate correlations	All Disruptive Incidents (ADI)	Serious Disruptive Incidents Only (SDIO)
AGG Raw Scores (Parent/Teacher)	0.620**	0.550**
CU Trait Raw Scores (Parent)	0.368**	0.277**

** Correlation is significant at 0.01 level (1 tailed)   N=118

The two dichotomous measures (AGG75 and CU 75) were also significantly correlated with the school disruptive behaviours variables although not at the 0.01 level in the case of ICU 75 and SDIO ($p<0.05$). The relationships between the combined predictor (AGG & ICU 75) and the two outcome variables were stronger than those for ICU 75 alone, but weaker than those for AGG 75 alone.

Table 3.12: Correlations Between AGG 75, ICU 75 and AGG ICU 75 v ADI and SDIO.

Pearson bivariate correlations	ADI	SDIO
AGG 75	0.543**	0.483**
ICU 75	0.278**	0.204*
AGG & ICU 75	0.422**	0.335**

** Correlation is significant at 0.01 level (1 tailed)   N=118
 * Correlation is significant at 0.05 level (1 tailed)   N=118

The finding that the combined variable (AGG CU 75) was less strongly correlated with reoffending than AGG alone does not support Hypothesis 1. Interestingly the inter-correlation between the dichotomous predictor variables AGG 75 and ICU 75 is significant, $r= 0.468$, ($p<0.001$). (The inter-correlation for AGG and ICU raw scores, is even higher, $r= 0.657$, $p<0.0001$). Hierarchical regression will determine the unique contribution of the dichotomous independent variables

The particular method for combining scores from the two scales, used above to create AGG CU 75, is not necessarily optimal, however. Hierarchical regression was used to determine the unique contributions of the dichotomous independent variables to prediction each of the dependent variables (ADI and SDIO). Given AGG 75 has the highest predictive validity, the first model had AGG 75 as the only independent variable, and ICU 75 was added in a second step. The results, for both dependent variables, are given in Table 3.16. They reveal no evidence to support a unique contribution from CU traits at all. That is, the second step of adding CU 75 did not improve variance accounted for to an extent that was statistically significant in either case. For ADI the change in R squared (ΔR^2; 0.001) was extremely small and not statistically significant, and the similar change in R squared$\square$ for SDIO was also nonsignificant.

An alternative second step involved the addition of the combined dichotomous variable AGG ICU 75. Again the improvement in R squared was not statistically significant for either ADI or SDIO. There were no problems with collinearity.

Table 3.13. Hierarchical Regression**:** AGG 75 + ICU 75 + AGG ICU 75 - ADI & SDIO

Variable Model ADI	Unstd β	β	R	R$\square$	ΔR$\square$	p	Collinearity Tolerance
1 AGG 75	**1.015**	**0.543**	**0.543**	**0.295**		**0.000****	1.000
2 AGG 75	0.978	0.176					0.695
ICU 75	0.080	0.168	0.544	0.296	0.001	0.633	0.695
2 AGG 75	0.925	0.495					0.426
AGG ICU 75	0.152	0.066	0.545	0.297	0.002	0.557	0.426
Variable Model SDIO							
1 AGG 75	**0.460**	**0.483**	**0.483**	**0.234**		**0.000****	1.000
2 AGG 75	0.473	0.497					0.781
ICU 75	-0.027	-0.028	0.484	0.234	0.001	0.760	0.781
2 AGG 75	0.478	0.502					0.483
AGG ICU 75	-0.029	-0.025	0.484	0.234	0.000	0.830	0.483

However it is still possible that the relationship between ICU scores and delinquency outcomes could be moderated by aggression scores, as proposed in hypothesis two. To test this possibility both AGG (raw scores) and ICU (raw scores) were mean centred and multiplied to prevent multicollinearity and moderator analyses were conducted.

Table 3.14. Hierarchical Regression: AGG & ICU Mean Centred and Multiplied - Descriptive Statistics.

	N	Mean	Std Dev	Min	Max
AGG Mean Centred	118	0.000	10.26	-8.0	36.0
ICU Mean Centred	118	0.000	10.39	-17.5	27.5
AGG* ICU Mean Centred	118	69.48	164.38	-105.79	989.94

The first step of the regression models (for ADI and SDIO) includes the two mean-centred predictor variables, and the second adds their product (AGG mean centred * ICU mean centred). The results are given in Table 3.15. For both dependent variables, the mean centred product of AGG and ICU was not significant at any level (ADI, p=0.450 and SDIO, p=0.384). This suggests not only that ICU does not add any unique variance in predicting school disruptive behaviours at Time 2, but that there is also no evidence to support the hypothesis that the relationship between ICU score and delinquency depends upon the level of aggression.

Table 3.15. Hierarchical Regression: Moderator Effect - ADI & SDIO

Variable Model ADI	Unstd β	β	R	R□	ΔR□	p	Collinearity Tolerance
1							
AGG Mean Centred	**0.053**	**0.667**					**0.568**
ICU Mean Cantered	**-0.005**	**-0.070**	**0.623**	**0.388**		**0.000**	**0.568**
2							
AGG Mean Centred	0.048	0.613					0.372
ICU Mean Cantered	-0.005	-0.070					0.568
AGG ICU Mean Centred Product	0.000	0.077	0.625	0.391	0.003	0.450	0.519
Variable Model SDIO							
1							
AGG Mean Centred	**0.026**	**0.648**					**0.568**
ICU Mean Cantered	**-0.006**	**-0.149**	**0.561**	**0.315**		**0.000**	**0.568**
2							
AGG Mean Centred	0.023	0.583					0.372
ICU Mean Cantered	-0.006	-0.149					0.568
AGG ICU Mean Centred Product	0.000	0.094	0.565	0.319	0.005	0.384	0.519

Finally a moderator effect for CU traits was tested within the most aggressive participants (the top 25%, n=29) (those with CBCL – aggression scores above 63). Their CU trait (raw scores) were regressed against both dependent variables (ADI and SDIO). Again there was no evidence to suggest CU traits was

able to predict those involved in disruptive school behaviours. Again information about participants CU traits was unable to add to the information already provided by aggression.

Table 3.16. Hierarchical Regression: Testing for Moderator Effect on Top 25% AGG - ADI & SDIO

ADI	R	R□	p
ICU Top 25% AGG	**0.125**	**0.016**	**0.519**
SDIO			
ICU Top 25% AGG	**0.021**	**0.000**	**0.913**

3.3.1 Other School Variables and ADI & SDIO

Having established aggression as a valid predictor of school disruptive behaviours, we now consider other variables collected at Time 2 that might be predictive of delinquency, and might explain additional variance over and above aggression. Pearson bivariate correlations are detailed in table 3.17 for academic performance, school attendance, school activity involvement, peer relationships, caregiver school involvement, and nutritional responsibilities with the two measures of school antisocial behaviour, ADI and SDIO.

None of the academic variables correlated at a statistically significant level. A child's ability to communicate verbally showed the strongest correlation with ADI at 0.17 (p = 0.068). No evidence was found to support any relationship between recorded school attendance and either measure of disciplinary incidents. The participant's involvement in sport and their total involvement across all three extracurricular activities did have a significant negative relationship with both disruptive measures (p<0.05). The number of recorded prosocial peers has a strong and significant negative relationship with both ADI and SDIO (p<0.001). The number of antisocial peers has a significant positive relationship with ADI (p<0.05), but not with SDIO (p>0.05). The variable that subtracted prosocial peers from antisocial peers (prosocial less antisocial peers) almost correlated as highly as prosocial peers across both dependent measures.

There was some evidence of a negative relationship between caregiver school involvement for both ADI and SDIO. This was most significant for the two questions concerning caregiver's involvement with their child's homework, in regards to checking if their child had any homework or had completed their

homework and actually assisting the child with their homework. While these two questions were not completed or relevant for 19% and 25% of the sample respectively, the relationship of each with outcome measures was significant (p<0.01). Children that were arriving at school having not had breakfast and / or without a school lunch were significantly more likely to also have disruptive incident records (p<0.001 and p<0.001).

Correlations were computed using statistical options of exclude cases pairwise and mean substitution to account for the missing data but the results did not differ significantly. The results detailed in table 3.17 are exclude cases pairwise.

Table 3.17. Correlations of Time 2 School Predictors v ADI and SDIO

		ADI	SDIO
Reading	N=118	-0.02	0.00
Verbal Communication	N=118	-0.17	-0.13
Verbal Comprehension	N=118	-0.11	-0.09
Mathematics	N=118	-0.14	-0.10
General Academic Ability	N=118	-0.11	-0.10
Unexplained absence	N=108	-0.02	0.08
Extra Curricular Activities (not sport)	N=112	-0.15	-0.10
Sport	N=117	**-0.23***	**-0.21***
Leadership	N=108	-0.13	-0.12
Total Extra Curricular Involvement	N=118	**-0.21***	**-0.18***
Antisocial Peers	N=118	**0.23***	0.16
Prosocial Peers	N=118	**-0.42****	**-0.34****
Total Peers	N=118	**-0.19***	-0.17
Prosocial less Antisocial Peers	N=118	**-0.40****	**-0.31****
Attends parent teacher interviews	N=101	-0.13	**-0.21***
Attends school meetings	N= 96	-0.06	-0.11
Phones or visits teacher	N=110	-0.00	-0.06
Attends school events	N=102	**-0.20***	-0.15
Volunteers to assist with school events	N=101	-0.05	-0.12
Checks homework	N= 95	**-0.31****	**-0.29****
Assists with homework	N= 88	**-0.33****	**-0.35****
Total Caregiver School Involvement	N=118#	**-0.18***	**-0.22***
No breakfast / school lunch	N=108	**0.33****	**0.37****

All correlations were calculated by excluding cases pairwise when data was not recorded and again using mean substitution. While this resulted in different correlations for some variables there was no meaningful chance in the level of statistical significance (e.g. movement between n.s. - 0.05 - 0.01 - 0.001.)

** Correlation is significant at 0.01 level (1 tailed)   # To create an overall total, blank entries were treated as zero.

 * Correlation is significant at 0.05 level (1 tailed)

The intercorrelations between the Time 2 variables, including aggression, generally indicate that while there are strong relationships within the same categories (e.g. checks home and assists with homework, r=.86) overall they are not especially strong (all equal or less than ± 0.4) suggesting each construct is

relatively independent. Some of the stronger correlations between constructs (or components of) that are statistically significant include aggression and two of the three peer variables, aggression and lunch / breakfast, most of the extracurricular activities and peer intercorrelations, most of the extracurricular activities and caregiver interest intercorrelations, and checks homework and breakfast lunch.

Table 3.18 – Intercorrelations of Significant Independent Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Aggression	-	-.20	-.19	.02	-.40*	-.27	-.35*	.18	-.15	-.28	-.21	-.19	-.32*
2. Sport		-	.79*	-.12	.43*	.34*	.28*	.18	.42*	.30*	.25	.30*	-.14
3. Total Extra Curricular Involvement			-	-.27	.50*	.47*	.21	.07	.39*	.15	.22	.21	-.16
4. Antisocial Peers				-	-.35*	-.81*	.54*	-.08	-.09	-.06	-.03	-.04	.20
5. Prosocial Peers					-	.83*	.60*	.10	.15	.26	.17	.10	-.22
6. Total Peers						-	.05*	.03	.06	.18	.13	.06	-.04
7. Prosocial less Antisocial Peers							-	.11	.15	.20	.12	.09	-.26*
8. Attends parent teacher interviews								-	.56*	.63*	.61*	.70*	-.26*
9. Attends school events									-	.58*	.53*	.78*	-.22
10. Checks homework										-	.86*	.77*	-.45*
11. Assists with homework											-	.78*	-.38*
12. Total Caregiver School Involvement												-	-.21
13. No breakfast / school lunch													-

*Correlation is significant at 0.01

3.3.2 Optimal Regression Models – ADI & SDIO

Using SPSS, the variables showing statistically significant first-order correlations with ADI and SDIO were added into a Stepwise Linear Regression model with aggression, using the stepping method criteria probability of F entry <= 0.05 and removal >=0.10. Given there was missing data a choice was required and the option of 'excluding cases pairwise' was selected. For ADI the variables to add to the predictive validity of aggression (38.5% of the variance) were Prosocial less Antisocial Peers (6.6%) and Caregiver assists with homework (3.6%). For SDIO the only variable to add to the predictive validity of Aggression' (30.2%) was Caregiver assists with homework (6.3%).

Table 3.19. Stepwise Hierarchical Regress. (Excluded pairwise) AGG + Time 2 Variables – ADI & SDIO.

Variable Model ADI	R	R☐	ΔR☐	p
1. AGG	**0.620**	**0.385**		**0.000**
2. AGG, Pro-Anti Peers	**0.671**	**0.450**	**0.066**	**0.003**
3. AGG, Pro-Anti Peers, Asst HW	**0.698**	**0.487**	**0.036**	**0.021**
Variable Model SDIO				
1. AGG	**0.550**	**0.302**		**0.000**
2. AGG, Asst HW	**0.604**	**0.365**	**0.063**	**0.006**

The same analysis was repeated with the same variables and the same criteria but on this occasion the missing data option 'replace with mean' was selected instead of 'exclude cases pairwise'. The results and

variance explained were identical for aggression and prosocial less antisocial peers as expected given both variables had no missing data, however when means were substituted for the 30 cases with missing data for caregiver assists with homework it fall just short of statistical significance (p=0.056) and no other variables became significantly predictive.

Table 3.20. Stepwise Hierarchical Regress. (Replace Mean) AGG + Time 2 Variables – ADI & SDIO.

Variable Model ADI	R	R□	ΔR□	p
1. AGG	**0.620**	**0.385**		**0.000**
2. AGG, Pro-Anti Peers	**0.671**	**0.450**	**0.066**	**0.003**
3. AGG, Pro-Anti Peers, Asst HW	0.684	0.468	0.017	0.056
Variable Model SDIO				
1. AGG	**0.550**	**0.302**		**0.000**
2. AGG, Asst HW	**0.589**	**0.347**	**0.044**	**0.006**
3. AGG, Asst HW, Pro-Anti Peers	**0.611**	**0.373**	**0.027**	**0.029**

Finally, a further analysis was conducted to determine whether any of these variables could improve prediction of school antisocial behaviour beyond that achieved by aggression. First, aggression was regressed against ADI, and the residuals were computed. Then, STATISTICA 9 was used with the option of best subset regression, with means substituted for missing data. This comprehensive process of testing all possible combinations of variables that could make a statistically meaningful contribution (p<0.05) over and above aggression confirmed that the optimal model for ADI was aggression + prosocial less antisocial peers and for SDIO aggression + caregiver assists with homework + prosocial less antisocial peers. These results were consistent with the results above.

CHAPTER FOUR

4.0   Discussion

4.1   Combining CU traits and Aggression to Predict Disruptive Behaviours

CU traits, assessed at Time 1, was able to predict youth who were more likely to become involved in disciplinary incidents at school during the following year. To the extent that school disciplinary problems represent early antisocial behaviour, this result is consistent with the literature supporting an association between CU traits and delinquency / conduct problems, and the literature that supports the Revised Psychopathy Checklist Factor 1 characteristics (of which CU traits is an important component) as predictive of serious and violent offending (Christian, et al., 1997; Essau, et al., 2006; Frick, et al., 2003a; Frick, Kimonis, et al., 2003c; Frick, et al., 2005; Pardini, et al., 2007).

As expected the behavioural measure aggression was a strong predictor of later school disruptive behaviours across both outcome dimensions (Huesman, et al., 1984; Loeber & Le Blanc, 1990; Lynam, 1996; Stattin & Magnusson, 1989). The correlations between aggression and school disruptive behaviour measures were substantially greater than the equivalent correlations for CU traits. This was consistent with the literature (Loeber & Farrington, 1998).

The combined variable (AGG ICU 75 - that captures participants high on both CU traits and aggression) was a statistically valid predictor and more predictive than CU traits alone. This outcome is consistent with literature that highlights the unique attributes of behavioural measures (e.g. aggression) and interpersonal traits (e.g. CU traits) in the prediction of delinquency (Christian, et al., 1997; Frick, Kimonis, et al., 2003c; Frick, et al., 2005).

However, the results did not support the first and primary hypothesis, as AGG ICU 75 was not as predictive as aggression alone (AGG 75). The loss of variance explained in attaching less weighting to the single aggression measure was greater than any additional variance explained by including information about participant's CU traits. While this finding was unexpected, it does not necessarily

indicate that CU traits is not adding significant predictive validity. Instead it highlights the greater predictive validity of the behavioural measure aggression compared to CU traits.

In trying to understand why the primary hypothesis was not supported it is important to acknowledge the differences in methodology between this study and the research the hypothesis was based. The approach generally adopted by Frick and colleagues in their studies has not included a direct comparison of the predictive validity of behavioural measures (e.g. conduct problems / aggression) with CU traits and then combining the two variables, as in the case of this research. They have instead focused on identifying how antisocial youth high and low on CU traits differ. The hypothesis that a combined measure made up of two equally weighted variables should outperform each in isolation, presupposes that the independent variables are at least similar in their ability to predict the dependent variable. However while these variables are both predictive and at least partially independent, the predictive utility of aggression and CU traits differ significantly. It is quite possible, therefore, that had different weightings been used in creating AGG CU 75, (e.g. a greater weighting for aggression) the primary hypothesis may have been supported.

This possibility was tested using hierarchical multiple regression to determine the unique contribution of CU traits, over and above aggression. Interestingly and in contrast with the essence of Frick's key findings CU traits did not add statistically significant predictive validity, over and above aggression. This was surprising as Frick and colleagues are not only specific in their criticism of behavioural measures as too similar to outcome variables, but also in their belief that CU traits with its emphasis on interpersonal and affective characteristics has a unique ability to identify highly antisocial youth that are at the greatest risk of severe offending (Christian, et al., 1997; Frick, et al., 2003a; Frick, Kimonis, et al., 2003c; Frick, et al., 2005).

The absence of evidence for an interaction between aggression and CU traits meant that there was also no support for the second hypothesis, that the relationship between CU traits and antisocial outcomes will be moderated by aggression. The final analysis attempted to replicate as closely as possible Frick's specific reference to the predictive validity of CU traits within an antisocial sample. In Frick's 2003 & 2005

studies, the methodology involved a comparison of a subgroup of antisocial youth that were high on CU traits with other control groups with different combinations of conduct problems and CU traits. While aggression was used instead of conduct problems in the present study, the lack of any evidence from the regression analysis to support the utility of CU traits within a subgroup of youth at high risk of antisocial behaviours, again suggests CU traits does not provide any unique predictiveness that is not already contained within aggression.

These later results are completely inconsistent with the essence of Frick's key claims. Frick does acknowledge that CU traits is not independent from behavioural definitions of conduct problems, a strong correlation has been cited at least twice (r= 0.50) (Christian, et al., 1997) and (r=0.55; p<0.001) (Frick, Kimonis, et al., 2003c). However, Frick and colleagues are explicit in their belief that CU traits also has a unique dimension that differs affectively and interpersonally from behavioural measures and this component has the potential to identify youth at the greatest risk of serious offending over and above the predictive validity of behavioural measures (Frick, Kimonis, et al., 2003c).

These results directly challenge the evidence that claims to support the predictive utility of CU traits over and above behavioural measures. While the rationale underlying the essence of the theory concerning temperamental style, behavioural inhibition, fearfulness, and harm avoidance is logical and well supported (Frick, 2006; Frick, et al., 2003a)(Lahey and Waldman 2003; Lynam and Gudonis 2005) there is distinct lack of research that uses multiple regression to specifically tests CU traits predicitive ability over and above behavioural measures.

In light of the present findings, studies that have often been cited as supporting a unique role for CU traits in predicting delinquency, such as Christian et al (1997) and Frick, Cornell et al (2003), were reviewed more closely. On closer scrutiny, it becomes apparent that they often do not appear to be sufficiently robust to justify the conclusions drawn. For example Frick, Cornell et al (2003) stated at one year follow up "none of the interactions between CU traits and conduct problems were significant" and "when these analyses were repeated controlling for initial levels of conduct problems all of these effects for both CU trait and conduct problems were reduced to nonsignificance. (Frick, Cornell et al, 2003, p. 464). Even the

findings that were cited to support CU traits relating to proactive aggression only "approached significance $F(1,85) = 3.68$, $p < .05$." with some mixed support for 'self reported delinquency' none of which met a level of significance of $p < 0.01$. Similarly Christian et al (1997) conclude their group high on CU traits (n=11) had a greater number and variety of conduct problems, yet they do not appear to provide evidence that any of these differences were statistically significant, and conclusive evidence for a stronger history of police contacts appears to also be lacking. Finally the Comprehensive Behaviour Rating Scale for Children (CBRSC) used to assess conduct disorder appears to fail to support CU traits as predictive, yet this finding is over looked.

Furthermore Frick and colleagues' choice of CU traits as the critical psychopathic construct to identify youth most likely to seriously offend within an antisocial subgroup could also be questioned. Rather than acknowledging the predictive utility of all of the Factor 1 dimensions from the Revised Psychopathy Checklist, CU traits is often cited as the only conceivable construct worthy of consideration. For example Frick, Cornell et al (2003) and Frick, Stickle et al. (2005) refer to studies by Brandt and colleagues (Brandt, Kennedy, Patrick, & Curtin, 1997) and Forth and colleagues (Forth, Hart, & Hare, 1990) to substantiate their claim that the presence of CU traits predicts subsequent delinquency, aggression, number of violent offences and a shorter length of time to violent reoffending in antisocial youth. However both studies refer to Revised Psychopathy Checklist Factor 1 items that includes CU traits as just one of several components (others include glibness, superficial charm, egocentricity / grandiose sense of self worth, pathological lying, deception and conning, and lack of sincerity) as having predictive validity. Frick and colleagues (Frick, Bodin, et al., 2000) also make specific reference to the ability of CU traits to differentiate inmates that show a more severe and violent pattern of antisocial behaviour. Again however, the studies cited (Hare, Hart, & Harpur, 1991) and (Hare, 1998) make no specific reference to CU traits, instead their findings concern psychopathy generally or Factor 1 characteristics.

Research by Marsee and colleagues further questions the legitimacy of these assumptions. They compared the association between the three psychopathic traits - CU, narcissism, and impulsivity with aggression and delinquency and found that while there was no overall statistically significant difference, CU traits consistently recorded the lowest correlations with aggression and delinquency (Marsee,

Silverthorn, & Frick, 2005). Kerig and Stellwagen compared the ability of CU traits, narcissism, impulsivity and Machiavellianism to predict proactive, reactive, physical and relational aggression and found impulsivity to be the most predictive and callous unemotional to be the least. CU traits made no unique contribution over and beyond impulsivity and narcissism for reactive aggression and relational aggressive, and while it did contribute towards proactive and physical aggression ($p<0.05$) this was to a lesser degree than both impulsivity and narcissism (Kerig & Stellwagen, 2009).

Similarly Barry and colleagues looked at the predictive utility of narcissism among children and adolescents. They found CU traits correlated with baseline conduct problems and delinquency at the first year follow up, but did not predict any portion of unique variance for the dependent variables of police contacts and delinquency at one year, two year and three year follow ups, unlike maladaptive narcissism that featured consistently (Barry, Frick, Adler, & Grafeman, 2007). These findings do not just indicate that the predictive validity of narcissism deserves serious consideration, but that it may indeed be superior to CU traits.

A possible explanation for these conflicting findings is that Frick and colleagues have focused on behavioural measures e.g. conduct disorder (CD) , oppositional defiant disorder (ODD) and conduct problems (CP) that are exclusively behaviourally focused. The conduct disorder criteria in the DSM IV-TR, all relate to violent, property, status or drug offences (Association, 2000) . They also make use of the Self-Report of Delinquency Scale (SRD) (Elliott & Ageton, 1980) based on the child's self report of 36 juvenile acts. None of these measures assess affect, mood or temperament. In comparison the aggression measure used in this study from the CBCL does not appear to be exclusively behavioural. For example, it includes the items; explosive, easily frustrated, stubborn, sullen or irritable, sudden changes in mood or feelings, sulks a lot and suspicious.

A factor analysis on the CBCL Aggression items might reveal a far broader range of attributes some of which include affective and interpersonal characteristics that are not included in other traditional behavioural measures. It is quite possible that some of the shared association between the Time 1 independent variables aggression and CU traits used in this study ($r=0.657$ raw scores) includes

characteristics that are consistent with the CU traits dimension of psychopathy that Frick and colleagues suggest has predictive utility.

Given the outcome data was collected relatively recently and the sample were still very young (likely to be largely preadolescent) it could potentially be argued that youth high on CU traits have yet to engage in serious antisocial behaviours but this propensity is currently latent and could be revealed if future outcome data was collected. This possibility however is unlikely as the study by Frick et al (Frick, et al., 2005) that supports the predictive utility of CU traits shows high level of disruptive behaviours (across three dimensions) at the first 12 month follow up, that then generally decline over time, except for police contacts that peaks at 24 month follow up before declining. The exception was drug use that, understandably, increases over time. While this possibility that youth in this sample are yet to reveal serious disruptive behaviours is potentially consistent with Moffitt's adolescent limited offending trajectory, the claims by Frick and colleagues about the potential predictive utility of CU traits has specifically targeted the life course persistent youth offender (Christian, et al., 1997; Frick, et al., 2003a; Frick, Kimonis, et al., 2003c; Frick, et al., 2005; Moffitt, 1993a).

The lack of support for CU traits could be attributed to the reliance in this study on a single informant (youth's teacher) for the outcome measures. Frick and colleagues (Frick, et al., 2005) found their conduct disordered group high on CU traits differed most from the other groups when delinquency was self reported. It could therefore be suggested that had this study included a measure of self reported delinquency, that CU traits may have been shown to be more predictive. However, Loeber and colleagues examined the accuracy of different informants and found children the least useful informants on their own oppositional behaviour, behind teachers and mothers (Loeber, Green, & Lahey, 1990). Similar findings were recorded in a study that compared children, mothers and teachers ratings of disruptive child behaviours with prevalence rates of symptoms from the DISC. While children reported significantly less oppositional behaviours than both teachers and parents, they did not differ in their report of more serious conduct problems.

It could also be argued that a moderate sized sample (n=118) of largely preadolescent youth could be too small to contain a sufficient number of serious disruptive behaviours. CU traits has been specifically highlighted as a potential predictor of not just delinquency but serious and violent antisocial youth behaviours committed by only (5% of boys and 1-2% of girls) (e.g. Moffitt's LCP offenders) (Christian, et al., 1997; Frick, Kimonis, et al., 2003c; Frick, et al., 2005; Moffitt, 1993a). This potential limitation was highlighted by Frick and colleagues with their sample of 98 even though they over sampled youth high on CU traits and CP (Frick, Kimonis, et al., 2003c; Frick, et al., 2005). In reality 13 youth (11% of the sample) engaged in SDIO, so while this was not a low base rate, it is still sufficiently small to be cautious about the results involving SDIO. This possibility however is not supported by the correlations from Table 3.12 that indicate that the strength of the relationships between the dependent and independent variables (dichotomous and raw scores) actually decreases in moving from any disruptive incident to serious disruptive incidents only. This decrease in predictive validity seems to suggest that the seriousness of incidents is unlikely to explain the lack of evidence supporting CU traits over and above aggression.

It could also be argued that a discrepancy exists when comparing the 11% of the sample that engaged in 'SDIO' (this increases to 16% if girls are excluded - LCP offenders are predominantly boys (Moffitt, 1993a)) with the 5% that might have been anticipated based on Moffitt's LCP offender bases rates (Moffitt, 1993a). This discrepancy suggests the possibility that the recorded incidents may not be sufficiently serious to adequately test the predictive validity of CU traits. However the methodology deliberately targeted low-decile schools, thereby over representing families with lower socio economic status and so higher rates of disruptive behaviours (and eventually, delinquency) were expected (Bolger, et al., 1995; Merton, 1938; Peterson & Krivo, 2005; Shaw & McKinlay, 1929). Furthermore the high number of serious consequences that followed many of these serious incidents (e.g. suspension and behaviour referrals) suggests the incidents were indeed of a serious nature.

Finally the cut off point for the variables ICU 75 and AGG CU 75 of above the 75th percentile could be questioned as too low to optimally capture those with CU traits that are suggestive of serious antisocial behaviours. Frick, Bodin et al. (2000) support this possibility suggesting only very high scores on the

Callous-Unemotional scale appear to be related to severe conduct problems. However using hierarchical multiple regression with the raw score variables (AGG & ICU) enables any additional predictive utility to emerge without arbitrary cut off points influencing the results.

In summary:

1) CU traits showed only moderate relationships to school disciplinary problems and these disappeared when another predictor variable, aggression, was included in the analysis;

2) Scrutiny of the literature suggesting a role for CU traits suggests that the empirical basis may have been overstated;

3) The present results are consistent with a minority of studies that have reached more cautious conclusions about its utility;

4) The idea of incorporating variables from other domains than the traditional set of behavioural variables has obvious merit, but the evidence supporting CU traits is not at present compelling.

4.2   School Related Predictors of Disruptive Behaviours

4.2.1   Academic Performance

While the correlations between the academic performance variables and the outcome measures generally supported a negative relationship (as expected) none were statistically significant. This lack of significant results was somewhat unexpected. Obviously the widely discussed relationship between intelligence and delinquency does not directly translate to a relationship between school academic performance and disruptive behaviours. IQ and academic performance are highly correlated but unique constructs. As highlighted by Hinshaw (1992) and Lynam and Henry (2001) there is support for the IQ / delinquency relationship being driven by verbal IQ or crystallized intelligence contributing to disruptive school behaviours through misunderstanding rules, poor social cognitive information processing and deficiencies in learning, abstract thought and problem solving. While non-significant the direction of the relationship

between the two verbal predictors, verbal 'communication' and 'comprehension' and the dependent variables did support this notion.

4.2.2 Truancy

Unfortunately the perceived data quality collected for 'unexplained school absences' was poor. In communicating with school administrators and teachers it become very apparent they themselves had little confidence that the data actually represented genuine truancy. The key problem was the process for accounting for school absences in most schools was not stringently enforced. Often students were known to be absent but there absence was not recorded. Also if request for an explanation of an absence was not responded to the absence was categorised as 'unexplained' even when it was highly likely that a legitimate reason existed. The term 'unexplained absence' was also not clearly defined creating additional confusion.

4.2.3 School Involvement in Extracurricular Activities

Extracurricular activity has shown inconsistent relationships with delinquency in the literature, and it has been suggested that its effects depend on the overall resource levels for such activities within the school. Given the funding across New Zealand schools is consistently at least satisfactory it was not surprising to find sport and total extracurricular involvement were somewhat predictive of delinquency. Given the correlations for sport were slightly greater than those for total extracurricular involvement it appears sporting involvement is the predominant variable. Its exact influence is difficult to identify but the literature suggest that possibilities could include greater emotional attachment, sense of achievement, opportunities for positive socialization and development of prosocial values, and an alternative use of time rather than engaging in delinquent activities (Eccles and Barber1999; Hoffman, 2002; Jenkins, 1995; Jenkins, 1997).

4.2.4   Peer Influence

The moderate relationship between the number of antisocial peers and ADI (and no significant relationship for SDIO) was somewhat unexpected given the quantity and depth of findings supporting this association (Agnew, 1993; Erickson, et al., 2000; Patterson, et al., 1991; Quinton, et al., 1993). The findings of Monahan, Steinberg et al. (2009) discussed earlier, that as youth develop they establish more meaningful peer relationships, increasing their susceptibility to peer influence, suggests that age appears to act as moderating variable. This could explain the lower-than-expected influence of antisocial peers given the relatively young age of sample participants (10.5-12.5 years old at Time 1).

Also unexpected was the strong relationship between the number of prosocial peers and both behavioural measures. This finding suggests that not having prosocial peers in an individual's social network, is a significant risk factor. This outcome is inconsistent with the age as moderator / young sample notion above. While the literature is dominated by the negative influence of antisocial peers, there is practically no reference to how the absence of prosocial peers might influence delinquency. The strong result in the present study suggests that an absence of peers that provide clear behavioural guidelines and expectations, cohesive norms and prosocial values (Haynie, 2002) is more important than the number of antisocial peers. An individual with few prosocial peers also has fewer opportunities to benefit from prosocial learning experiences.

The variable total peers that was only weakly predictive of ADI was overshadowed by prosocial less antisocial peers. This variable combined the benefits of prosocial peers and the disadvantages of antisocial peers with equal contributions cancelling each other out. This simultaneously takes into account the literature that explores the negative influences of antisocial peers (Agnew, 1993; Erickson, et al., 2000; Patterson, et al., 1991; Quinton, et al., 1993) but also acknowledges the potential for prosocial friendships to have a prosocial influence (which appears particularly relevant for this data set). While the literature on the influence of prosocial peers is minimal Sutherland's differential association theory is worthy of consideration. He emphasizes through interaction with others, individuals learn the values, attitudes, techniques, and motives for criminal behaviour and are more likely to offend when there is an

excess of definitions favourable to violation of law over definitions unfavourable to violation of law (Sutherland & Cressey, 1970). The relevant of the theory is that it acknowledges the conflicting messages individuals receive that simultaneously support and discourage criminal behaviours and that the overriding message is likely to ultimately be most influential.

There is also extensive literature supporting mentoring relationships between children at risk of antisocial outcomes and a single prosocial adult that demonstrate lower rates of later delinquency (Tierney, Grossman, & Resch, 2000) Werner & Smith 1992;(Vance, Fernandez, & Biber, 1998). While acknowledging the obvious difference between same aged peer relationships and a relationship with an adult, these findings at least support further exploration of the role of prosocial peers.

4.2.5   Caregiver School Involvement

The involvement of caregivers in their child's schooling was construed as a component of parental support, a strong predictor of delinquency (Barnes & Farrell, 1992; Rollins & Thomas, 1979). While data was collected on a range of measures targeting any contact between parents and schools, communication from teachers indicated that many of the questions were problematic in determining parental support, as the targeted interaction was too infrequent during the time period (e.g. parent teacher interviews) or potentially not indicative of parental support (e.g. a phone call / visit from a parent refusing payment of school fees). However two items appeared to largely avoid these concerns, assists with homework and checks homework. Their strong negative relationships with both outcome variables in the present study suggest that parental support is evident through caregivers involvement with their child's homework. Parental interest and support is believed to increase feelings of psychological wellbeing, confidence and self esteem which indirectly assists social and academic competence. It is also suggested that such children are less inclined to risk parental disapproval by engaging in delinquency (Hirschi, 1969).

4.2.6   Nutritional Responsibilities

Children that failed to arrive at school having had breakfast and/or arrived without a school lunch could conceivably be at risk of engaging in disruptive behaviours for a myriad of reasons. Possibilities include a lack of parental support, parental neglect and low socio economic status. With each a proven risk factor to varying degrees (Arthur, 2007; Bolger, et al., 1995; Merton, 1938; Rollins & Thomas, 1979) the results that indicated 'nutritional responsibilities' correlated strongly with both measures were expected. This rather unusual variable however could also be indirectly influenced by other predictors, e.g. parental depression.

4.2.7   Combining Aggression and School Related Predictors

With aggression established as the most powerful predictor of later school disruptive behaviours the additional independent variables to consistently emerge across the three multiple regression analyses were prosocial less antisocial peers and caregiver assists with homework.   While the amount of purported variance each explained varied depending on the treatment of missing data, the step the variable entered the regression model and the choice of dependent variable in almost every case it was statistically significant. This suggests that both these variables justify genuine additional consideration.

Furthermore, each of the three identified school predictors, were supported extensively in the literature (assuming the association between 'caregiver assist with homework' and 'parental support' is accepted), and this support was validated with strong correlations with both dependent measures. Additionally the inter-correlations between each of the three variables were low (suggesting relatively unique constructs) with only the correlation between aggression and prosocial less antisocial peers achieving moderate statistical significance.

The three variables combined to explain slightly less than 50% of variance related to disruptive school behaviours. This compared favourably to Le Blanc and colleagues that explained 45% of the variance in predicting adolescent offending with eleven school predictors or 'concepts' (Le Blanc, Vallieres, &

McDuff, 1992). Other delinquency models created by Le Blanc, Ouimet and Tremblay (1988) and Elliot et al (1985) have explained proportions of up to 60% but these were comprehensive models with significantly more than three variables (Elliott, Huizinga, & Ageton, 1985; Le Blanc, Ouimet, & Tremblay, 1988).

It is essential however for these results to be replicated with other non-referred school samples, before proclaiming their utility as an optimal combination. As discussed, results from sophisticated statistical packages such as multiple regression are at risk of placing undue emphasis on chance relationships. If similar findings are replicated not only could the combination be useful for predictive purposes but each also is indicative of a starting point for interventions. Obviously the foundation and the extent of the relationship between caregiver school involvement and parental support requires significant exploration.

4.3   Conclusion

It is well known that crime has significant social and financial costs and serious and violent offenders start their criminal careers early. Less known is that as interventions to reduce recidivism become increasing empirically based they are becoming more effective (Andrews, et al., 1990). This success however, necessitates early and accurate identification (Chung, et al., 2002; Loeber & Farrington, 2000b). It has therefore never been so important to further develop our understanding of predictive behaviours and characteristics of youth that go on to become serious and violent adult offenders.

There are three important components in this process. Firstly, a valid predictor of offending needs to be empirically validated. Secondly, given the multitude and complexity of the causes of crime, combinations of predictors need to be considered, rather than focusing on predictors in isolation. Finally a well planned, objective and robust methodology is essential to test predictive combinations to enable confidence and certainty in moving ahead.

This study has used a school context to explore the combination of aggression and CU traits. Both are empirically supported as valid predictors of delinquency, yet each is also predictive for unique reasons, providing a sound rationale for combining the two. The third requirement however is the hardest to meet, and so if these findings, that failed to support the aggression / CU traits combination, are used to question

the claims that support the predictive validity of CU traits, it is important these conflicting findings are replicated with an even more robust methodology.

This study however, also contained an exploratory component resulting in two school predictors emerge worthy of further exploration. The variable prosocial less antisocial peers was interesting as it highlighted how researching peer network groups more broadly might be important to better understanding criminal antecedents. Finally while caregiver assist with homework could be representing well known and well researched predictors, it is critical to test the possibility that it might also represent, at least partially, a new predictor yet to be researched. May the search continue.

4.3.1   Limitations and Future Research

The sample size of n=118 was relatively small especially given the low base rate for serious disruptive behaviours (Moffitt, 1993a). While the targeting of low decile schools appeared to be successful in increasing this base rate, 75% of the sample did not engage in any disruptive behaviour and 89% avoiding involvement in serious disruptive incidents, a common problem in criminal research. This results in a relatively small number of participants significantly influencing the key findings. Furthermore there is a possibility that those excluded due to incomplete data collection were not necessarily representative of the whole sample. Of the eight participants that were excluded, outcome data was collected for seven, and three of those seven (43%) had engaged in disruptive behaviours.

While this was a mixed gender sample (59% boys) only two girls engaged in any form of disruptive behaviour. This made it impossible to draw any conclusions about the predictive validity for any of the independent variables across gender.

As discussed, it was not possible to follow the exact methodology adopted by Frick and colleagues in utilizing the highest item score from either parent or teacher for behavioural measures (Piacentini, Cohen, & Cohen, 1992). Instead the highest total score was used as the teacher and parent CBCL questionnaires for aggression differed slightly to capture unique aspects of the home and school environment, with total

scores converted to T scores. Additionally only a single informant (the teacher) provided outcome data. Similar studies have used teachers and the participants as informants, and self reported delinquency data can result in unique findings (Christian, et al., 1997).

Given the large number of antecedents of offending it is important to control for known relationships or mediating variables before drawing significant conclusions. Such factors as socio economic status and parental criminality could potentially be mediating the relationship between the independent and dependent variables yet attempts were not made to test for mediators or control variables suspected to play a causal role.

Finally reference has been made to the predictive utility of Time 2 variables that were assessed at the same time as the Time 2 outcome measures. With no time delay there is no way of determining the direction of causality or possible third variables. While past findings from similar studies will indicate the likely direction of causality and variables that could become targets for interventions, ideally there would be a delay between data collection of independent and dependent variables as there was for aggression and CU traits.

An obvious direction for future research would be to replicate this study over a longer time period with outcome data collected at follow up, over a series of consecutive years. Given the high inter-correlation between aggression and CU traits and the broad range of items included in the aggression scale of the CBCL, other measures of aggression could be considered e.g. the Scale of Proactive and Reactive Aggression (Dodge & Coie, 1987b) that do not correlate highly with the other independent variables. Simultaneous consideration of the other psychopathic dimensions, narcissism and impulsivity and a methodology that utilises hierarchical multiple regression would assist to determine the unique contribution of each, over and above the behavioural measure(s). While the predictive validity of aggression in this study was particularly significant, other behavioural measures that have been found to be strong predictors such as past delinquency (Siegel & Welsh, 2008) or CD diagnosis (Farrington, 1989a) could also be considered.

Finally the predictive validity of prosocial peers and the variable that subtracts antisocial from prosocial peers requires replication. Future studies need to determine if information about prosocial peers can explain additional variance over and above information about antisocial peers. Given the intensity and frequency of friendships can vary, efforts could be made to weight the more influential peer relationships accordingly.

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Appendix A

Child Behaviour Checklist For Ages 6-18 Completed by pupil's Teacher

| TEACHER'S REPORT FORM FOR AGES 6-18 | For office use only ID# |

Your answers will be used to compare the pupil with other pupils whose teachers have completed similar forms. The information from this form will also be used for comparison with other information about this pupil. Please answer as well as you can, even if you lack full information. Scores on individual items will be combined to identify general patterns of behavior. Feel free to print additional comments beside each item and in the spaces provided on page 2. ***Please print, and answer all items.***

PUPIL's FULL NAME	First	Middle	Last	PARENT'S USUAL TYPE OF WORK, even if not working now. (Please be specific – for example, auto mechanic, high school teacher, homemaker, labourer, lathe operator, shoe salesman, army sergeant.) FATHERS TYPE OF WORK_____ MOTHER'S TYPE OF WORK_____ FORM FILLED OUT BY: (print your full name) _____
Pupil's Gender ❑ Boy ❑ Girl	PUPIL's AGE	PUPIL'S ETHNIC GROUP OR RACE	
TODAY's DATE Mo___Date___ Yr___	PUPIL'S BIRTHDATE (if known) Mo.___Date____Yr___	Your gender: ❑ Male ❑ Female Your role at school ❑ Classroom Teacher ❑ Counselor ❑ Special Educator ❑ Administrator ❑ Teacher's Aide ❑ Other (specify):
GRADE IN SCHOOL _____	NAME AND ADDRESS OF SCHOOL _____ _____	

Below is list of items that describes children and youth. For each item that describes your child ***now or within the past six months*** please circle the ***2*** if the item is ***very true or often true*** of your child. Circle the ***1*** if the item is ***somewhat or sometimes true*** of your child. If the item is not true of your child circle the 0. Please answer all items as well as you can, even if some do not seem to apply to this pupil.

0= Not True (as far as you know)   1= Somewhat or sometime true   2= Very True or Often True

0 1 2	3.	Argues a lot	0 1 2	76.	Explosive
0 1 2	6.	Defiant	0 1 2	77.	Easily frustrated
0 1 2	16.	Cruelty, bullying or meanness to others	0 1 2	86.	Stubborn, sullen, or irritable
0 1 2	19.	Demands a lot of attention	0 1 2	87.	Sudden changes in mood or feelings
0 1 2	20.	Destroys his/her own things	0 1 2	88.	Sulks a lot
			0 1 2	89.	Suspicious
0 1 2	21.	Destroys things belonging to his/her family or others	0 1 2	94.	Teases a lot
			0 1 2	95.	Temper tantrums or hot temper
0 1 2	23.	Disobedient at school			
0 1 2	37.	Gets in many fights	0 1 2	97.	Threatens people
0 1 2	57.	Physically attacks people	0 1 2	104.	Usually loud
0 1 2	68.	Screams a lot			

Be sure you answered all items. Then see the other side.

Appendix B

Child Behaviour Checklist For Ages 6-18 Completed by child's Caregiver

Please print	**CHILD BEHAVIOUR CHECKLIST FOR AGES 6-18**	For office use only ID#

PUPIL's First Middle Last FULL NAME		PARENT'S USUAL TYPE OF WORK, even if not working now. (Please be specific – for example, auto mechanic, high school teacher, homemaker, labourer, lathe operator, shoe salesman, army sergeant.) FATHERS TYPE OF WORK_____	
Child's Gender ❑ Boy ❑ Girl	CHILD'S AGE	CHILD'S ETHNIC GROUP OR RACE	MOTHER'S TYPE OF WORK_____ **FORM FILLED OUT BY: (print your full name)**
TODAY's DATE Mo___Date___ Yr___		PUPIL'S BIRTHDATE (if known) Mo.___Date____Yr___	_____
GRADE IN SCHOOL _____ NOT ATTENDING SCHOOL ❑	Please fill this form out to reflect your view of the child's behavior even if other people might not agree. Feel free to print additional comments beside each item and in the space provided on page 2. **Be sure to answer all items.**		Your gender: ❑ Male ❑ Female Your relation to the child: ❑ Biological Parent ❑ Step Parent ❑ Grandparent ❑ Adoptive Parent ❑ Foster Parent ❑ Other (specify):

Below is list of items that describes children and youths. For each item that describes your child **now or within the past six months** please circle the **2** if the item is **very true or often true** of your child. Circle the **1** if the item is **somewhat or sometimes true** of your child. If the item is **not true** of your child circle the **0**. Please answer all items as well as you can, even if some do not seem to apply to your child.

0= Not True (as far as you know)   1= Somewhat or sometime true   2= Very True or Often True

0 1 2	3.	Argues a lot		0 1 2	86.	Stubborn, sullen, or irritable
0 1 2	16.	Cruelty, bullying or meanness to others		0 1 2	87.	Sudden changes in mood or feelings
0 1 2	19.	Demands a lot of attention		0 1 2	88.	Sulks a lot
0 1 2	20.	Destroys his/her own things		0 1 2	89.	Suspicious
				0 1 2	94.	Teases a lot
0 1 2	21.	Destroys things belonging to his/her family or others		0 1 2	95.	Temper tantrums or hot temper
0 1 2	22.	Disobedient at home		0 1 2	97.	Threatens people
0 1 2	23.	Disobedient at school		0 1 2	104.	Usually loud
0 1 2	37.	Gets in many fights				
0 1 2	57.	Physically attacks people				
0 1 2	68.	Screams a lot				

Be sure you answered all items. Then see the other side.

Appendix C

ICU
(Youth Version)

Name: _____

Date Completed: _____

Instructions: *Please read each statement and decide how well it describes you. Mark your answer by circling the appropriate number (0-3) for each statement. Do not leave any statement unrated.*

	Not at all true	Somewhat true	Very true	Definitely True
1. I express my feelings openly.	0	1	2	3
2. What I think is "right" and "wrong" is different from what other people think.	0	1	2	3
3. I care about how well I do at school or work.	0	1	2	3
4. I do not care who I hurt to get what I want.	0	1	2	3
5. I feel bad or guilty when I do something wrong.	0	1	2	3
6. I do not show my emotions to others.	0	1	2	3
7. I do not care about being on time.	0	1	2	3
8. I am concerned about the feelings of others.	0	1	2	3
9. I do not care if I get into trouble.	0	1	2	3
10. I do not let my feelings control me.	0	1	2	3
11. I do not care about doing things well.	0	1	2	3
12. I seem very cold and uncaring to others.	0	1	2	3
13. I easily admit to being wrong.	0	1	2	3
14. It is easy for others to tell how I am feeling.	0	1	2	3
15. I always try my best.	0	1	2	3
16. I apologize ("say I am sorry") to persons I hurt.	0	1	2	3
17. I try not to hurt others' feelings.	0	1	2	3
18. I do not feel remorseful when I do something wrong.	0	1	2	3
19. I am very expressive and emotional.	0	1	2	3
20. I do not like to put the time into doing things well.	0	1	2	3

21. The feelings of others are unimportant to me.	0	1	2	3
22. I hide my feelings from others.	0	1	2	3
23. I work hard on everything I do.	0	1	2	3
24. I do things to make others feel good.	0	1	2	3

Unpublished rating scale by Paul J. Frick, Department of Psychology, University of New Orleans (pfrick@uno.edu) .

Appendix D

DEED OF CONFIDENTIALITY

THIS DEED is made this   **day of November 2008**

BY………Simon Panckhurst (the researcher)

Background

A   The Researcher is undertaking a research project: *School Factors in Social Adjustment*, for purposes including the completion of a Masters degree at the University of Canterbury.

B   For the purposes of the Project, the Researcher requires access to Confidential Information held by ……………………………………….School

C   For the purposes of the Project the Researcher may also need to observe, question or conduct interviews.

D   The School is willing to give the Researcher access to Confidential Information it holds subject to the terms of this Deed.

The Terms of this Deed are as follows:

1.   Definition

1.1   "Confidential Information" means any confidential information held by the School or obtained through the observation, questioning or interviewing of School staff, customers (clients) or other persons dealing with the School and includes but is not limited to confidential information:

    (a) relating to the organisation, methods, administration, operation, business affairs, or financial or commercial arrangements of the School, its customers (clients) or other persons dealing with the School; and

    (b) relating to any School customers (clients) or other persons dealing with the School, including name, address, personal, medical or business affairs or any other information; and

    (c) relating to the security arrangements made between the School and any customer (client) or other person dealing with the School; and

    (d) relating to contracts or arrangements made between the School and any customer (client) or other persons dealing with the School; and

    (e) of any nature, technical or otherwise, relating to any product or process with which the School is involved in any capacity that is not information in the public domain.

1.2   "Participant" means any staff member, voluntary worker, School customer (client), or any other person to be observed, questioned or interviewed by the Researcher for the purpose of the Project.

2.   Use, access and obtaining of Confidential Information

The Researcher is given access to Confidential Information only for the purpose of the Project and the Confidential Information shall only be used by the Researcher for that purpose.

The Researcher will not remove from the premises of the School any file, paper, document or other type of record which is the property of the School, without the consent of the Chief Executive Officer of the School (or delegate).

All Confidential Information disclosed to the Researcher remains the property of the School.

Where observation, questioning or interviewing are necessary for the Project, the Researcher must obtain consent from all participants before such observation, questioning or interviewing takes place.

The Researcher will ensure that each Participant:

    (a)   is fully informed of the nature and purpose of the Project; and
    (b)   has given informed consent to being observed, questioned, interviewed and to their school records being examined; and
    (c)   is able to withdraw that consent at any time; and
    (d)   has the opportunity to view and provide feedback on the data collected from the Participant by the Researcher.

3.   Protection of Confidential Information

Confidential Information collected as part of the study will be accessible to the Researcher's supervisor(s).

The Researcher will not, other than with the written consent of an employee of the School authorised by the Chief Executive Officer of the School, disclose to any other person or agency, including a research assistant, any Confidential Information which the Researcher obtains for the Project, except as required by law.

3.2 Any disclosure of Confidential Information by any person or agency, in breach of this Deed, shall be deemed to be a disclosure by the Researcher and therefore a breach of this Deed by the Researcher. This applies whether or not that information was obtained with written consent pursuant to clause 3.1.

3.3 The Researcher will take all reasonable care to ensure that all Confidential Information in the possession of the Researcher is securely kept.

3.4 The Researcher will not make copies (including electronic copies and photographs) of Confidential Information held by the School except where necessary for the purposes of the Project and with the written consent of an employee of the School authorised by the Chief Executive Officer of the School. At the conclusion of the Project, or on request, the Researcher will return to the School all copies of any documents, books, records, papers, computer database or other property in the Researcher's possession belonging to the School.

3.5 In any presentation of the results of the Project (by way of a published or unpublished report, thesis, book, academic paper, article, lecture, speech, broadcast, letter, conversation or any other form) the Researcher will not identify individuals or disclose any other Confidential Information.

3.6 (Where requested) the Researcher will submit to an employee of the School authorised by the Chief Executive Officer of the School a final draft of any account of the Project. This employee will have the right to require such deletions or alterations as considered necessary to prevent the identification of individuals or to avoid disclosure of any other Confidential Information.

4. General Terms

4.1 This Deed is in addition to, and does not in any way limit or prejudice, the Researcher's obligations at law in respect of Confidential Information, including in particular those under the Privacy Act 1993. Nor does it affect the Researcher's rights under the Official Information Act 1982.

4.2 The Researcher's obligations in respect of Confidential Information under this Deed will continue after the completion of the Project.

SIGNED BY……………………………………(Researcher)
        Simon Panckhurst

in the presence of:

Witness:………………………………………………..

Occupation:……………………………………………

Date:…………………………………………………….

Appendix E

College of Science

Department of Psychology
Tel: +64 3642 199, Fax: + 64 364 2181
Email: neville.blampied@canterbury.ac.nz

<div style="text-align:right">

UC

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

</div>

<Address>
<Address>
<City>

Dear <Teacher>

Since 2006 members of the University of Canterbury Psychology Department have been conducting a Canterbury Youth Development study with 126 children from nine Christchurch primary schools. You may well be aware of this study through recent contact with Nina McLoughlin (nina.mcloughlin@student.canterbury.ac.nz ph. 364 2987 ext 3894) and or Julia Rucklidge, Anthony McLean & Randolph Grace. Nina has contacted you recently or will be contacting you to ask teachers to complete some questionnaires about the children. These questionnaires will take approximately 20-25 minutes to complete and the teachers will receive a $20 voucher per child.

Also, as part of this project we acquired the parent / caregiver's permission to gain access to the children's school records. However, when we recently contacted the primary schools involved in this study to access these records we became aware that individual school records basically travel with the child to their new school.

The purpose of this letter is to request permission for me to access the 2006-2007 school records of children involved in this study to further our research objectives, specifically developing a better understanding of youth risk and resilience factors.

While we are still in the process of confirming all the children involved in the study our records current indicate those that attend <School> include:

1	XXXXX	4	XXXXX
2	XXXXX	5	XXXXX
3	XXXXX	6	XXXXX

<Teacher> I hope it might be convenient to contact you directly by phone to discuss further and ideally arrange a time to visit <School> so I can introduce myself as I am recent addition to the project team. In the meantime please feel free to contact me directly by email sjp28@student.canterbury.ac.nz or phone 977 1972 (work) or at University 364 2987 ext 7997.

Kind regards
Simon Panckhurst
University of Canterbury Masters Student

Appendix F

College of Science

Department of Psychology
Tel: +64 3642 199, Fax: + 64 364 2181
Email: neville.blampied@canterbury.ac.nz

26 August 2008

Dear <Principal>

Since 2006 members of the University of Canterbury Psychology Department have been conducting a Canterbury Youth Longitudinal Study with 126 children from nine Christchurch primary schools. <Name participant> was a student at <Old school> prior to starting at <New School> this year and he is involved in this study.

I have only recently joined this project, early work has been conducted by Nina McLoughlin, Julia Rucklidge, Anthony McLean & Randolph Grace. My role in this project is to focus on the children's changing behaviours and their level of achievement in academic and non academic activities. I am not in any way interested in analyzing the school students attend.

The purpose of this letter is to request assistance in accessing <participant's> school records from term 1 and term 2 of 2008. Obtaining this information is essential to allow us to achieve our research objectives, specifically to develop a better understanding of youth risk and resilience factors. I appreciate this will impede on <Participant's> teacher's valuable time and while this will be minimal, I would be very thankful as coming from a teaching background, I am very aware of the high demands on teachers time.

The records we like to obtain would include test scores from benchmark testing in reading, comprehension and maths, records of disruptive behaviours and consequences including, school referrals, suspensions, etc., and <Participant's> participation and success in other non academic activities including sport. Obviously <Participant's> parent / caregivers permission to gain access to his/her school records has been obtained and a copy of this consent form will be made available.

A very short questionnaire (less than 10 minutes) intended for <Participant's> 2008 teacher has been created to capture any information that has not been recorded. There are also some other questionnaires that ideally his/her teacher would complete that are part of the larger study Nina is coordinating. These will take approximately 20-25 minutes for which his/her teacher would receive a **$20 petrol/Warehouse voucher** for their personal use.

I hope it might be convenient to contact you directly by phone to introduce myself and for you to inform me of <Participant's> teacher and how best to contact him/her. In the meantime please feel free to contact me by email sjp28@student.canterbury.ac.nz or by phone at University 364 2987 ext 7997.

Kind regards

Simon Panckhurst
University of Canterbury Psychology Masters Student

Youth Longitudinal Study – School Records Form
Guide / FAQ's

1.   **You have asked me to include copies of 'school records' as evidence to confirm the information I provide on "School Records" form– remind me what that means.** Records will include any information that is recorded on any school system or perhaps even your own personal classroom records (electronic or paper based) about the child's academic performance, attendance <u>and most importantly disruptive behaviours</u>. Even if the child has not engaged in any serious disruptive behaviours PLEASE still include (if possible) a print out with the child's name even though it might have no entries below their name. Obviously if the child has engaged in disruptive behaviours these would be detailed below their name. While we appreciate that sometimes school records don't exist or haven't been recorded <u>any</u> records that confirm <u>any</u> of the information requested on this form makes our research findings more robust and is hugely appreciated.

2.   **School Records Form – Question 2 (disruptive behaviours) What does 'seriousness of incident' mean?** Did their behaviour have a serious implication for you, class members, the school, etc.

3.   **School Records Form – Question 4 what is meant by "unexplained"?** This is most likely to be truancy but includes any absence with no legitimate explanation.

4.   **School Records Form – Question 5 – What is meant by "involvement, enthusiasm and enjoyment"?** Some students might participate in an activity or sport by going through the motions, showing very little interest or commitment. These children would score lowly on this scale.

5.   **The Social Behaviour Assessment Inventory** – This quite long white and blue form looks a bit scary but please ignore all the instructions on the front page apart from those highlighted. There is no need to enter any dates on the LHS column nor calculate averages to replace zeros as it suggested on the front page. Just enter a 0, 1, 2 or 3 on the RHS of each statement finishing on page 6.

Many thanks – we really do appreciate your assistance.

Simon Panckhurst, Psychology Masters Student - University of Canterbury

Ph. (03) 364 2987 extn. 7997   sjp28@student.canterbury.ac.nz

School Records
University of Canterbury, Youth Longitudinal Study

You have been identified as the most appropriate teacher to complete this evaluation as you are
teacher for 2008 or have had direct/significant contact with him/her for the majority of terms 1 & 2 of 2008.

☐ Correct	☐ Incorrect _____
	_____
	(if you are not the right person please discuss with Simon)

1. Academic   Please circle to indicate where   is currently at.

	More than 2 years delayed	**More than 1 year delayed**	**Average**	**More than 1 year ahead**	**More than 2 years ahead**
Reading	1	2	3	4	5
Ability to **verbally communicate**	1	2	3	4	5
Ability to **listen and understand verbal dialogue**	1	2	3	4	5
Numerical/mathematical ability	1	2	3	4	5
General academic ability (across all school subjects)	1	2	3	4	5

Additional comment (if necessary) _____
_____

2. Disruptive Behaviours   Please record all the serious disruptive incidents over terms one and two of 2008. If he/she has been involved in more than five incidents please only record the five most serious and acknowledge the number of additional incidents at the end of this section.

☐ He/she has not be involved in any serious disruptive incident during terms 1 & 2 of 2008   (go to question 3)

Please describe the incident below (10-12 words)	Seriousness of Incident	Consequence
1. _____ _____ ☐ There was no aggression/violence ☐ He/she introduced aggression ☐ He/she responded with aggression	☐ Mild ☐ Moderate ☐ Extreme	☐ warning ☐ loss of privileges ☐ detention ☐ suspension ☐ expulsion ☐ other_____

Choose the category below that best describes this incident:

☐ **Serious violation of school rules**– might include: deliberate or blatant disobedience, defiance, or disregard for school rules, e.g. refusing to do as asked, throwing things in class, running from classroom, arguing with teachers, etc. (Separate question about truancy later).

☐ **Stole, destroyed, vandalized or set fire or lied/deceived/acted dishonestly for personal gain** e.g. might include money, student or school materials / property, etc.

☐ **Bullied, threatened, intimidated, coerced or physically assaulted others** – might include: weapons, animals, verbal aggression, violence, inappropriate sexual acts.

☐ **Other** _____

Please describe the incident below (10-12 words)	Seriousness of Incident	Consequence
2. _____ _____ ☐ There was no aggression/violence ☐ He/she introduced aggression ☐ He/she responded with aggression	☐ Mild ☐ Moderate ☐ Extreme	☐ warning ☐ loss of privileges ☐ detention ☐ suspension ☐ expulsion ☐ other_____

Choose the category below that best describes this incident:

☐ **Serious violation of school rules**– might include: deliberate or blatant disobedience, defiance, or disregard for school rules, e.g. refusing to do as asked, throwing things in class, running from classroom, arguing with teachers, etc. (Separate question about truancy later).
☐ **Stole, destroyed, vandalized or set fire or lied/deceived/acted dishonestly for personal gain** e.g**.** might include money, student or school materials / property, etc.
☐ **Bullied, threatened, intimidated, coerced or physically assaulted others** – might include: weapons, animals, verbal aggression, violence, inappropriate sexual acts.
☐ **Other** _____

Please describe the incident below (10-12 words)	Seriousness of Incident	Consequence
3. _____ _____ ☐ There was no aggression/violence ☐ He/she introduced aggression ☐ He/she responded with aggression	☐ Mild ☐ Moderate ☐ Extreme	☐ warning ☐ loss of privileges ☐ detention ☐ suspension ☐ expulsion ☐ other_____

Choose the category below that best describes this incident:

☐ **Serious violation of school rules**– might include: deliberate or blatant disobedience, defiance, or disregard for school rules, e.g. refusing to do as asked, throwing things in class, running from classroom, arguing with teachers, etc. (Separate question about truancy later).
☐ **Stole, destroyed, vandalized or set fire or lied/deceived/acted dishonestly for personal gain** e.g**.** might include money, student or school materials / property, etc.
☐ **Bullied, threatened, intimidated, coerced or physically assaulted others** – might include: weapons, animals, verbal aggression, violence, inappropriate sexual acts.
☐ **Other** _____

Please describe the incident below (10-12 words)	Seriousness of Incident	Consequence
4. _____ _____ ☐ There was no aggression/violence ☐ He/she introduced aggression ☐ He/she responded with aggression	☐ Mild ☐ Moderate ☐ Extreme	☐ warning ☐ loss of privileges ☐ detention ☐ suspension ☐ expulsion ☐ other_____

Choose the category below that best describes this incident:

☐ **Serious violation of school rules**– might include: deliberate or blatant disobedience, defiance, or disregard for school rules, e.g. refusing to do as asked, throwing things in class, running from classroom, arguing with teachers, etc. (Separate question about truancy later).

☐ **Stole, destroyed, vandalized or set fire or lied/deceived/acted dishonestly for personal gain** e.g. might include money, student or school materials / property, etc.

☐ **Bullied, threatened, intimidated, coerced or physically assaulted others** – might include: weapons, animals, verbal aggression, violence, inappropriate sexual acts.

☐ **Other** _____

Please describe the incident below (10-12 words)	Seriousness of Incident	Consequence
5. _____ _____ ☐ There was no aggression/violence ☐ He/she introduced aggression ☐ He/she responded with aggression	☐ Mild ☐ Moderate ☐ Extreme	☐ warning ☐ loss of privileges ☐ detention ☐ suspension ☐ expulsion ☐ other_____

Choose the category below that best describes this incident:

☐ **Serious violation of school rules**– might include: deliberate or blatant disobedience, defiance, or disregard for school rules, e.g. refusing to do as asked, throwing things in class, running from classroom, arguing with teachers, etc. (Separate question about truancy later).

☐ **Stole, destroyed, vandalized or set fire or lied/deceived/acted dishonestly for personal gain** e.g. might include money, student or school materials / property, etc.

☐ **Bullied, threatened, intimidated, coerced or physically assaulted others** – might include: weapons, animals, verbal aggression, violence, inappropriate sexual acts.

☐ **Other** _____

Additional serious disruptive incidents not recorded above	1	2	3	4	5	6	7	8+

3. Referrals – Please indicate the number of referrals for disruptive behaviours, learning problems/ special needs or referrals related to the home during terms 1&2 of 2008. (Note: please record referrals that were in place prior to the first term of 2008 if they remain relevant and necessary for at least some part of 2008.)

Total number of unique referrals (circle)	0	1	2	3	4	5	6	7+

		Referral resulted from **disruptive behaviours**	Referral resulted from **special needs or learning problems**	Referral resulted from **neglect** or **problems at home/whanau**
1	Resource Teacher for Learning and Behaviour (RTLB)	☐	☐	☐
2	Child and Adolescent Mental Health Service (CAMS)	☐	☐	☐
3	Community Health Nurse	☐	☐	☐
4	Child Youth and Family Services (CYFS)	☐	☐	☐
5	Referral Group Special Education (GSE)	☐	☐	☐
6	McKenzie School	☐	☐	☐
7	Referral to _____	☐	☐	☐

4. School Attendance

How many ½ days absent did he/she have during terms 1&2 of 2008? _____ 1/2 days.							
How many of these were unexplained?	0	1-2	3-5	6-10	11+	n/a	Not sure

5. Extra Curricular / Non Academic Activities – Involvement and Enjoyment

a. Extra Curricular Activities – not sport
Optional activities: e.g. Kapa Haka, dance, singing, band/music, speech, drama, etc

	Low 0	1	Avg 2	3	High 4	N/A _____ _____
Involvement, enthusiasm and enjoyment						

b. Sport
Including any sport or games/ P.E. he/she participates in during school hours.

	Low 0	1	Avg 2	3	High 4	N/A _____ _____
Involvement, enthusiasm and enjoyment						

c. Leadership / positions of responsibility
e.g. road/ traffic warden, school council, duty monitor or prefect, peer support buddy, etc.

	Low 0	1	Avg 2	3	High 4	N/A _____ _____
Involvement, enthusiasm and enjoyment						

6. Peer Relationships - Please indicate to the best of your knowledge the number of each type of friends.

Troublesome / misbehaving friends (generally have a negative influence)	0	1	2	3	4+
Well behaved friends (no negative influence)	0	1	2	3	4+

7. Parental / Caregiver Involvement

	Rarely/ Never	Some-times	Often	Don't know	N/A
Attends parent teacher interviews	☐	☐	☐	☐	☐
Attends school meetings (excluding parent / teacher interviews)	☐	☐	☐	☐	☐
Phones or visits you (or another teacher)	☐	☐	☐	☐	☐
Attends school events (productions, etc.)	☐	☐	☐	☐	☐
Acts as a volunteer	☐	☐	☐	☐	☐
Checks homework	☐	☐	☐	☐	☐
Assists with homework	☐	☐	☐	☐	☐

8. Miscellaneous

	Rarely/ Never	Some-times	Often	Don't know	N/A
Comes to school having not had breakfast	☐	☐	☐	☐	☐
Comes to school with no lunch	☐	☐	☐	☐	☐

A genuine thank you for your time to complete this evaluation. It is much appreciated
Simon Panckhurst, Ph. 364 2987 x 7997,   sjp28@student.canterbury.ac.nz
Supervisor: Anthony McLean, anthony.mclean@canterbury.ac.nz

thanx

Appendix I

<div align="center">

Form Ai
Youth information sheet

</div>

University of Canterbury
Department of Psychology

The research
We are doing a project to look at New Zealand children and what leads them to crime as they get older. We also want to know what helps children grow up to be successful adults. You took part in this project last year and now we would like to know if you are interested in taking part again.

If you take part we will ask you questions about yourself, your family, your friends and school life. You will come to our University with your caregiver to answer these questions. It will take 3 hours. If you cannot come to our university we can ask the questions at your home and over the phone. We will contact you again at the same time next year.

We will also ask you if it is alright to contact one or more of your teachers and ask them some questions. We also would like to look at records about you from the police, your school and from Child, Youth and Family services.

If you would like to see your results we can show them to you. We will also ask your caregiver if it is alright for you to take part.

Harms
There are no known harms associated with this study.

Benefits
This study will give you a look at how well you are doing compared to people your age. We also want to help Christchurch Police and other people to help children as they grow up.

Keeping your results private
Your name will be replaced with a number so no one will be able to trace back anything to you. All of your answers will be locked away and the only people that will look at it will be people on the project. However, if we think you are a danger to yourself or to others we will have to pass your information on to keep you safe. Your results will be published along with all the other children, but your name will not be mentioned.

Money
You and your caregiver will get a koha / gift for taking part in our project. You will get a $50 voucher and your caregiver will get a $25 voucher. You and your caregiver will get a voucher every year you take part.

The project is being carried out by Dr Nina McLoughlin. Her supervisors are Dr Julia Rucklidge, Assoc. Prof Randolph Grace and Dr Anthony McLean.

We can be contacted at:

> The University of Canterbury
> Psychology Department
> Private Bag 4800
> Christchurch
> Phone: 03 364 2987 ext 3894

We will be pleased to talk to you about any problems you may. The project has been approved by the University of Canterbury Human Ethics Committee.

Form Bi
Caregiver information sheet

University of Canterbury
Department of Psychology

Purpose of research
You are invited to participate in the research project 'A study of the risk and protective factors for offending behaviour in New Zealand Children.'

The aim of this project is to investigate what things leads to potential problems in the future as well as the things that help children develop into successful adults. You and your child took part in this project last year and now we would like to know if you would like to take part again.

Description of research
Your involvement in this project will involve answering questions about yourself, your child's friends, family and school life. A researcher will carry out some tasks with you face-to-face. These will include some questions about family functioning and parent stress and anxiety. These tasks can be carried out at the University. This will take 2 hours. Your child's assessment will take 3 hours. If this is not possible we could carry the tasks out at you home and over the phone. As a follow-up to this, you will be contacted again next year.

We will also ask for your permission to:

❏ Contact one or more of your child's school teachers and ask for them to complete a questionnaire

❏ Access any records about your child that may be held by their school, the police, and/or Child, Youth and Family Services.

❏ Access any records about you that may be held by the police. You may have access to your results at any time.

Potential harms
There are no known harms associated with this study.

Potential benefits
We also hope that this information will be of use to Christchurch Police, youth services as well as other services to provide for young people as they grow up.

Confidentiality

You are assured of the complete confidentiality of data gathered in this investigation: the identity of participants will not be made public. To ensure anonymity and confidentiality you will be assigned a case number to replace your name. However, in cases where we are concerned about the safety of you, your child or the safety of others we may need to take measures to either keep you or others safe. All data will be stored securely and only accessed by people on the project.

The results of the project will be used for research purposes and will be published. However no names will be mentioned and your information will not be traced back to you.

Reimbursement

You and your child will get a koha / gift for taking part in our project. You will receive a $20 voucher and your child will receive a $50 voucher. You and your child will receive a voucher each, every year you take part.

The project is being carried out by Dr Nina McLoughlin under the supervision of Dr Julia Rucklidge, Assoc. Prof Randolph Grace and Dr Anthony McLean. We can be contacted at:

The University of Canterbury
Psychology Department
Private bag 4800
Christchurch
Phone: 03 364 2987 ext 3894

We will be pleased to discuss any concerns you may have about participation in the project. The project has been reviewed **_and approved_** by the University of Canterbury Human Ethics Committee.

Appendix K

Form Ai
Youth consent form

Dr Nina McLoughlin
The University of Canterbury
Psychology Department
Private Bag 4800
Christchurch
03 364 7001 (ext 3894)
nina.mcloughlin@canterbury.ac.nz

September 2007

'A study of the things that put children at risk and things that protect them from committing crimes in New Zealand'

I have read and I understand what I am being asked to do in this project. I agree to take part and agree for the results of the project to be published as long as my name is not used. I understand that I can drop out of the project at any time and ask for my results back.

I allow information to be accessed about me from the police, my school and from Child, Youth and Family Services

YES NO

I agree for my name to be kept so that I can be contacted in the future about other projects. I do not have to take part in these future projects.

YES NO

I would like a copy of my results

YES NO

I agree to participate:

NAME (please print):

Signature:

Caregiver's signature:

Date

Form Bi
Caregiver consent form (for youth's participation)

Dr Nina Mcloughlin
The University of Canterbury
Psychology Department
Private bag 4800
Christchurch
03 364 7001 (ext 3894)
nina.mcloughlin@canterbury.ac.nz

September 2007

'A study of the risk and protective factors for offending behaviour in New Zealand
Children'

I have read and understood the description of the above-named project. On this basis I agree to participate as a subject in the project, and I consent to publication of the results of the project with the understanding that anonymity will be preserved.

I understand also that I may at any time withdraw from the project, including withdrawal of any information I have provided.

I consent to information being gathered about my child from the police, my child's school and from Child, Youth and Family Services.

YES NO

I consent to my and my child's name being stored on a confidential database so that we can be contacted in the future should there be other studies for us to participate in with the understanding that we can choose whether to participate in such studies or not.

YES NO

I wish to have a copy of my child's results

YES NO

I hereby consent to my child participating in the study:

NAME (please print):

Signature:

Date:

Consent obtained from:

Form Bii
Caregiver consent form (for youth's teacher)

Dr Nina Mcloughlin
The University of Canterbury
Psychology Department
Private bag 4800
Christchurch
03 364 7001 (ext 3894)
nina.mcloughlin@canterbury.ac.nz

September 2007

'A study of the risk and protective factors for offending behaviour in New Zealand Children'

Name and address of school:

Name of teacher:

Child's name:

Child's date of birth:

I hereby give my permission for the disclosure of the following information to Dr Nina McLoughlin:

❐ School records about my child

❐ Social Behavior Inventory

❐ Anti-social Process Screening Device (APSD)

❐ Inventory of Callous-Unemotional traits (ICU)

❐ Child Behaviour Checklist (CBCL)

Name of caregiver:

Signed caregiver:

Date:

Consent obtained from: