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RISKING ANTISOCIALITY:
Individual & social-interaction factors

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*To my family,
for your amazing support!*

ABSTRACT

Antisociality is a major problem in societies all over the world. Knowledge that can help to prevent or change antisociality is thus important. Problems of antisocial nature usually begin in childhood or early adolescence and it is therefore important to study it in the course of development in order to trace its underlying causes.

The overall aim of this thesis was to investigate individual and social-interaction factors that may contribute to the development of antisociality, i.e. psychopathy tendencies and juvenile delinquency. More specifically, early hyperactivity and later psychopathy tendencies were investigated by focussing on early relations with family and friends, adjustment ability and later personality traits. Juvenile delinquency was studied in terms of delinquent behaviour patterns and personality traits and associations between delinquency and school bonding.

The studies were based on data from two longitudinal projects: *Young Lawbreakers as Adults* and *A short-term longitudinal project of adolescent problem behaviour: 1998-2000*. The former was initiated in 1956 and included early delinquent boys and a matched control group, where 199 out of the original 287 boys were followed-up in the 1980's. The latter project included all adolescents (n=1243) in 8th grade in a medium-sized community in Sweden and was initiated in 1998. At follow-up in 2000, 1007 adolescents took part in the project.

Our results indicated that there was a subgroup among hyperactive children with an elevated risk of developing psychopathy tendencies (Study II). More specifically, the hyperactive boys with subsequent psychopathy tendencies had more problems with friends and were more aggressive in childhood than the boys with no subsequent psychopathy tendencies. Non-hyperactive boys with subsequent psychopathy tendencies experienced a poorer emotional home climate and had poorer adjustment abilities in childhood than non-hyperactive boys without subsequent psychopathy tendencies (Study I). We also found that hyperactive males with subsequent psychopathy tendencies exhibited more impulsivity than non-hyperactive males with subsequent psychopathy tendencies. Furthermore, our results indicated that it might be possible to assess psychopathy tendencies using personality questionnaires (Study II).

Our analyses of juvenile delinquency identified four replicable clusters over an 18 month period, indicating that a subdivision into minor, serious and violent delinquency may be useful in future research into juvenile delinquency. Particularly boys characterised by serious delinquency exhibited high somatic anxiety, low psychic strength and high non-conformity. Girls characterised by serious delinquency exhibited high impulsivity and sensation seeking, high out-acting aggression and high non-conformity (Study III). In the analyses of delinquency and school bonding it was found that adolescent boys' delinquency propensity was affected by all school bonding dimensions, implying that it is crucial for boys to experience school itself, school work, and teacher relations as fruitful and harmonious in order to stay on a prosocial developmental path. In terms of adolescent girls' delinquency propensity, only their perceived relationship with their teachers was suggested to be of major significance (Study IV).

Finally, the findings suggest that it is beneficial to study antisocial individuals in smaller and more homogenous subgroups, as this can contribute to a deeper understanding of individual differences in antisociality.

Keywords: Antisociality, Juvenile delinquency, Psychopathy tendencies, Hyperactivity, Personality traits, Adolescence, School, Family, Friends, Subgroups

SVENSK SAMMANFATTNING

Eftersom antisocialitet utgör problem kopplat till ekonomiska kostnader för samhället och till emotionellt lidande för drabbade individer är kunskap som kan bidra till att förhindra eller förändra problem av antisocial natur av stor vikt. Vanligen uppstår antisocialitet i barndomen eller tidiga tonår. Det är därför viktigt att studera antisocialitet från barndomen till vuxen ålder för att spåra eventuella underliggande orsaker. Med nya insikter och förståelse för underliggande problematik ökar möjligheterna att i ett tidigt skede sätta in mer effektiva förebyggande åtgärder.

Syftet med denna avhandling var att undersöka om individuella egenskaper och sociala faktorer i närmiljön bidrar till utvecklingen av antisocialitet. Mer specifikt studerades å ena sidan hyperaktivitet i barndomen och psykopatitendenser i vuxen ålder. Å andra sidan studerades ungdomsbrottslighet samt hur personlighetsdrag är relaterade till olika brottsmönster. Vidare studerades sambandet mellan ungdomsbrottslighet och relation till skolan och lärare.

Studierna baserades på data från två uppföljningsprojekt. Det ena projektet initierades 1956 och inkluderade tidigt brottsliga pojkar samt en kontrollgrupp. Det andra projektet påbörjades 1998 och inkluderade alla ungdomar som gick i åttonde klass i en mellanstor svensk stad. Dessa ungdomar följdes sedermera upp i slutet av nionde klass.

Våra resultat visade att det fanns en mindre grupp bland hyperaktiva pojkar som hade en ökad risk att utveckla psykopatitendenser (Studie II). De hyperaktiva pojkarna med senare psykopatitendenser hade i barndomen ofta problem i kamratrelationer och de var ofta aggressiva. Icke hyperaktiva pojkar med senare psykopatitendenser, å andra sidan, hade i barndomen ofta upplevt ett dåligt emotionellt hemklimat och hade dålig anpassningsförmåga (Studie I). Vi fann även att hyperaktiva pojkar med senare psykopatitendenser oftast var mycket impulsiva. Vidare tydde våra resultat på möjligheten att påvisa psykopatitendenser genom att använda sig av personlighetsformulär (Studie II).

Avseende ungdomsbrottslighet fann vi att mer än hälften av ungdomarna hade begått någon form av brottslig handling i högstadiet. Vi fann vidare tydliga grupperingar av ungdomar som ägnade sig åt vissa typer av brott, dessa karakteriserades av mindre förseelser, mer allvarliga brott och av våldsbrott. Avseende personlighet visade det sig vidare att pojkar som i huvudsak ägnade sig av mer allvarliga brott påvisade omfattande kroppslig och psykisk ångest, samt dålig anpassning. Flickor som ägnade sig åt allvarlig brottlighet påvisade impulsivitet och spänningslystnad, aggressivitet och bristande anpassning (Studie III). Då vi studerade sambandet mellan ungdomsbrottslighet och upplevd relation till skolan fann vi att det var av stor vikt för pojkar att uppleva skolan, skolarbetet och relationen till lärare som god och harmonisk för att inte hamna i en antisocial bana. För flickor fann vi däremot att deras relation till lärare var den enda viktiga faktorn för eventuell brottsbenägenhet (Studie IV).

Utifrån dessa resultat föreslog vi att det är fördelaktigt att studera antisociala individer i mindre och mer homogena grupper eftersom detta kan bidra till en djupare och mer omfattande förståelse av individuella olikheter i antisocialitet.

LIST OF PUBLICATIONS

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LIST OF ABBREVIATIONS

ADHD	Attention Deficit/Hyperactivity Disorder
APD	Antisocial Personality Disorder
CD	Conduct Disorder ¹
CD	Concentration Difficulties ²
IQ	Intelligence
KSP	Karolinska Scales of Personality
KSP-J	Karolinska Scales of Personality – Junior version
ODD	Oppositional Defiant Disorder
PCL	Psychopathy Checklist
PCL-R	Psychopathy Checklist Revised
MR	Motor Restlessness
YLA	Young Lawbreakers as Adults

Note: ¹ CD as Conduct Disorder is only used in the introduction of the thesis;

² CD as Concentration Difficulties is only used in reference to Study I and II.

1 INTRODUCTION

1.1 THE CONCEPT OF ANTISOCIALITY

By definition antisociality means the condition of being antisocial and antisocial can be defined as someone being opposed to the principles on which society is based. It primarily refers to a person's lack of normal social instincts or practices ("Oxford English dictionary [Electronic resource]," 2000). Or it may be "descriptive of behaviour which is disruptive and harmful (or potentially so) to the functioning of a group or society" (Reber, 1995, p. 44), p. 44). The underlying assumption about the content and meaning of being antisocial is that it is a repeated violation of the rights and safety of others. The terms antisocial behaviour or antisocial personality are usually used in the literature. However, both these terms have been criticised since they refer either to behavioural aspects or personality characteristics.

Antisocial behaviour consists of a number of socially deviant behaviours usually characterised by deficits in self-control (Sher & Trull, 1994). It is largely viewed as a syndrome based upon a number of antisocial symptoms, in which various types of behaviour play a role (Farrington, 2003). In diagnosed form in adulthood the antisocial syndrome is called antisocial personality disorder (APD). The types of behaviours involved in the disorder include ignorance of social norms and rules, criminality, repeated arrests, sexual promiscuity, difficulty maintaining relationships, heavy drinking, drug use and irresponsibility. Typical personality characteristics involve impulsivity and a lack of planning ahead, lack of empathy and remorse, callousness, aggressiveness and low frustration tolerance (APA, 2000; WHO, 1992). A number of researchers have criticised the classification of the antisocial syndrome pointing out that the focus is on the behaviour more than personality traits (Hare, Hart, & Harpur, 1991).

Consequently, some researchers focus primarily on the antisocial personality, which postulates that people with such a syndrome have little sense of responsibility, morality, or concern for others. Their behaviour is determined almost entirely by their own needs and they often lack a sense of what is right and wrong in terms of moral standards. This syndrome is also referred to as psychopathy or psychopathic personality (Hare, et al., 1991; Statt, 1998). However, it has also been suggested that the term antisocial personality is misleading, because the characteristics of a person with antisocial personality do not describe most people who commit antisocial acts (Atkinson, Atkinson, Smith, Bem, & Nolen-Hoeksema, 1996).

The importance of the distinction between antisocial behaviour and antisocial personality is that the former focuses on actual behaviour, such as violation of the law, while the latter focuses on intrinsic personality, such as indifference to other people's needs. The term antisociality covers behavioural aspects as well as personality features. Although it is by no means suggested that antisociality should be studied with the behavioural and personality aspects aggregated. Rather the opposite, that behavioural aspects and personality features with their respective risks should be studied on its own. The studies in the present thesis deal with the outcomes psychopathy tendencies (Study I & II) and juvenile delinquency (Study III and IV) and possible risk indicators for these outcomes. The terms psychopathy or

psychopathy tendencies, criminality or delinquency as well as antisocial behaviour will also be used in the thesis, where studies and theories specifically use those terms.

1.1.1 Why is it of interest to study antisociality?

Antisociality is a major problem in societies all over the world. It has been claimed that antisociality is one of the major causes of death, it increases the risk of violence and is connected to alcohol and drug-related problems (WHO, 2002). It causes much suffering among those displaying antisociality, their families, nearest relations and victims. It also gives rise to great costs for the community at large, including costs for incarceration, treatment and support for victims. Furthermore, antisocial individuals are at increased risk of both psychopathology (Broidy, et al., 2003; Doreleijers, Moser, Thijs, van Engeland, & Beyaert, 2000) physical illness (Odgers, Caspi, et al., 2007), economic hardship and poverty as well as school failure, unemployment and marital difficulties (Moffitt, Caspi, Harrington, & Milne, 2002). Accordingly, knowledge that can help to prevent or change antisociality is of major importance.

1.1.2 Antisociality: Theoretical perspectives

1.1.2.1 Psychiatric – categorical approach

The psychiatric approach to antisocial behaviour is mainly a categorical taxonomy, implying that it is a disorder with fixed cut-off points. The prime focus is on behavioural characteristics yet it also taps personality features. Historically, the psychiatric approach stems from a medical model that sees mental disorders as qualitatively distinct conditions. In early childhood antisocial behaviour in a diagnosed form is called oppositional defiant disorder (ODD) and some of the children with ODD develop conduct disorder (CD) in later childhood and early adolescence. CD is more severe than ODD and is a prerequisite for the diagnosis antisocial personality disorder (APD) in adulthood (APA, 2000). All of these disorders are categorical taxonomies, whereby the patients must fulfil a certain number of criteria with fixed cut-off points in order to obtain the diagnosis. Psychopathy is also a form of personality disorder, in particular a form of antisocial personality disorder (Hare, et al., 1991). Furthermore, psychopathy is a quasi-categorical taxonomy (Trull & Durrett, 2005), allowing the psychopathy construct to be viewed as a dimension. APD and psychopathy are related, although not identical, and the diagnostic concepts of antisocial personality disorder and psychopathy are not synonymous with criminality. It has, for instance, been reported that between 50-80% of prisoners meet the diagnostic criteria for antisocial personality disorder, whereas only about 15% of prisoners meet the criteria for psychopathy (Ogloff, 2006). Furthermore, it has been found that only one third of those diagnosed with APD meet the criteria for psychopathy (Hart & Hare, 1996). These figures thus indicate that psychopathy is a narrower construct than antisocial personality disorder.

1.1.2.2 Criminological approach

Criminologists focus on the actual violation of legal and social norms, which is referred to as criminality among adults and delinquency among children and adolescents. They usually study antisocial behaviour on the basis of official records of committed crimes. However, by relying solely on official records there is hidden statistics of criminality.

As a consequence, some criminologists also measure crimes through self-reports. It has been suggested that there is a weak association between the proportions of self-reported and official offenders, as well as between the number of self-reported and official offences (Farrington, et al., 2006). This leads to an underestimation of the actual occurrence of antisocial behaviour if one relies entirely on official records.

1.1.2.3 Psychological – dimensional approach

The psychological approach to antisociality focuses primarily on enduring personality traits. Importantly, the psychological approach is dimensional rather than categorical. By viewing antisociality as a dimension, without fixed cut-off points and not denominating it as a disorder, the scale is sliding. It has been argued that dimensional models improve our understanding of symptom heterogeneity. Thus, without apparent boundaries between categorical diagnoses, important information is retained, giving us more accurate information about the distribution of personality traits and further associated maladjustment (Trull & Durrett, 2005). There are thus advantages to a dimensional approach, which include the possibility to generate quantitative profiles of problem behaviours or features that may cut across common psychopathologies.

1.2 THEORETICAL FRAMEWORK OF THE PRESENT THESIS

Opinions differ about why some people become antisocial. Some claim biological explanations (e.g. Raine, 2002), some genetic (e.g. Rhee & Waldman, 2002), some neurobiological (e.g. Blair, 2003), others childhood individual factors (e.g. Klinteberg, 1997; Farrington, 2003, 2005a; Loeber, Burke, & Lahey, 2002; Loeber, Green, & Lahey, 2003; Robins, 1978; Rutter, 1997; Satterfield, 1978), family factors (e.g. Dekovic, Janssens, & Van As, 2003; Farrington, 2005a; Horwitz, Widom, McLaughlin, & White, 2001; Spatz Widom, 1997) while others point to peer influences (e.g. Jaccard, Blanton, & Dodge, 2005; Kiesner, Kerr, & Stattin, 2004; Poulin, Dishion, & Haas, 1999; Thornberry, 1987).

Since problems of the antisocial nature begin in childhood or early adolescences it is of importance to study antisociality in the course of development in order to trace its underlying causes. The studies in the present thesis use prospective longitudinal data focussing on individual and social-interaction factors. The theoretical framework is interactionistic and assumes that no single risk factor contributes independently to the development of antisociality. The assumption is rather that internal and external factors related to an individual co-operate in the developmental process. Furthermore, antisociality is broadly defined and includes tendencies towards psychopathy, on the one hand, and delinquency, on the other hand, which include acts that involve breaking the law, irrespective of whether the person is caught or prosecuted. The broadness of antisociality is additionally defined in such a way that it does not fall into any distinct category. It is better conceptualised as a sliding dimension and variations of behaviours, that in fact most individuals show to some degree. The approach is thus also dimensional.

1.3 PSYCHOPATHY AND PSYCHOPATHY TENDENCIES

It has been suggested that psychopathy refers to a specific although controversial personality construct (e.g. Vaughn, Howard, & DeLisi, 2008). The generally accepted personality description of psychopathy suggests that these individuals are impulsive, sensation-seeking, sometimes aggressive, callous, unemotional, egocentric, guiltless, deceptive, low in fear and anxiety and unable to develop warm affective bonds with other persons (e.g. Cleckley, 1988; Hare, et al., 1991; Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003; Vaughn, et al., 2008). In the assessment of psychopathic personality disorder the Psychopathy checklist revised PCL-R is commonly used (Hare, et al., 1991). Items in the PCL-R reflect interpersonal, affective and behavioural features forming the core of psychopathic personality disorder (Cleckley, 1988; Hare, 2003). The instrument relies more on personality attributes than behaviour (Hare, et al., 1991). Currently, the PCL-R is the most valid, reliable and useful instrument in the assessment of psychopathy in different populations and cultures (Cairns, Cadwallader, Estell, & Neckerman, 1997; Cooke, Hart, & Michie, 2004; Cooke, Kosson, & Michie, 2001; Sullivan, Abramowitz, Lopez, & Kosson, 2006).

Over the past few decades there has been controversy about the core psychopathy features, i.e. the factor structure of the instrument. A two-factor structure was initially found, reflecting an interpersonal, affective and callous domain versus a social deviance and antisocial domain (Hare, 2003; Hare, et al., 1991; Harpur, Hakstian, & Hare, 1988). Cooke & Michie (2001) have presented a hierarchical three-factor structure which includes an interpersonal domain of arrogance and deceitfulness, an affective domain of deficiency in affective experience and a lifestyle domain of impulsive and irresponsible behaviour. The three-factor solution excludes the items tapping antisocial behaviour in terms of criminality, thus emphasising personality traits more than behaviour. Lastly a four-factor solution has been identified, which includes the antisocial/criminality aspects that were excluded in the three-factor solution (Hare & Neumann, 2006; Neumann, Hare, & Newman, 2007).

In the present thesis, psychopathy is not defined according to a factor structure of the core features of psychopathy; psychopathy is rather viewed as the presence or absence of *psychopathy tendencies*. Psychopathy tendencies thus fall under the broader concept of antisociality although with the focus on personality features rather than the behaviour. The PCL (Hare, 1985) items used in the present thesis correspond to the personality features and behavioural aspects are not included (e.g. promiscuous sexual behaviour, early behaviour problems, juvenile delinquency, revocation of conditional release and criminal versatility). The items used in the studies in the present thesis correspond quite well to the factors used in Cooke and Michie's (2001) three-factor structure, from which items of antisocial behaviour and criminality were excluded. Furthermore, the 13 items correspond acceptably with the items of the later screening version of the Hare Psychopathy Checklist –Revised (PCL:SV; Cooke, Michie, Hart, & Hare, 1999), except that antisocial behaviour and criminality were not included (see Appendix 1 for a description of the 13 PCL items assessed). In addition, it has been argued that too much emphasis is placed on antisocial and criminal behaviours in the DSM criteria of antisocial personality disorder and too little emphasis is placed on the

personality traits that are assumed to be responsible for these behaviours (af Klinteberg, Humble, & Schalling, 1992).

1.4 DELINQUENCY AND OFFENDER GROUPS

Delinquency is very common in adolescence. Almost four out of five male adolescents report having engaged in delinquency and antisocial behaviour during their teenage years (Farrington, et al., 2003). Girls however commit fewer and less serious offences than boys (Lenssen, Doreleijers, Van Dijk, & Hartman, 2000; Moffitt, Caspi, Rutter, & Silva, 2001). This is well documented and there is consensus among researchers that rates of criminal activity increase sharply during adolescence and decrease significantly thereafter (e.g. Fergusson & Horwood, 2002; Sampson & Laub, 2003). This implies that during adolescence before the age of 17, many youths engage in some kind of antisocial behaviour. For most, the antisocial behaviour is limited to the period of adolescence, while for others it is part of a more stable pattern of maladjustment in which the criminal career continues into adulthood. Hence, a distinction between adolescence-limited and life-course persistent antisocial behaviour has been made (Moffitt, 1993). Adolescence-limited antisocial behaviour is assumed to be mainly attributable to the gap between social and biological age that adolescents experience during the transition from child to adult. To obtain mature status, many adolescents mimic the lifestyle of antisocial youths, engaging in less serious crimes such as vandalism and shoplifting. Persistent offenders, on the other hand, are assumed to engage in more serious crimes such as violent offences (Moffitt & Caspi, 2001).

Moffitt (1993) has argued that the frequency or seriousness of offences committed in adolescence is not sufficient to differentiate between adolescent-limited and persistent offenders. However, other findings suggest that males with persistent criminality commit more offences and that these offences are more serious and varying during adolescence than those committed by males whose criminal career ceases after adolescence (Eklund & af Kinteberg, 2006). Furthermore, it has been suggested that distinctions between adolescent-limited and life-course persistent offenders are not sufficient to explain pathways of types of offending instead more trajectories have been found: low-risk offenders, early onset adolescent-limited offenders, intermediate onset adolescent-limited offenders, late onset adolescent-limited offenders and chronic offenders (Fergusson & Horwood, 2002). Furthermore, research exploring risk factors for juvenile delinquency has been criticised for not trying to understand the heterogeneity of these young offenders (Odgers, Moretti, et al., 2007; Vaughn, et al., 2008). It has been suggested that offenders should be grouped according to type of crime rather than delinquency as a whole, or adolescent-limited versus lifetime-persistent offenders. Instead it has been suggested that multiple pathways are needed to account for antisocial development (Loeber & Stouthamer-Loeber, 1998). Because, for example, serious and persistent offenders are more likely also to commit violent offences, a multiple pathway of offending it is necessary to distinguish between serious offenders displaying both aggressive and non-aggressive offences and offenders engaging in non-aggressive offences only (Farrington & Loeber, 2000).

Some argue that there are differences between boys and girls regarding delinquency, with girls usually starting to commit crimes later than boys (Silverthorn & Frick, 1999). Others have however found that girls do not start committing crimes at a later age than boys (e.g. Moffitt, et al., 2001; Odgers, et al., 2008) and that the development over time is strikingly similar for boys and girls (Odgers, et al., 2008). Similarly it has been found that offending pathways are strikingly similar for boys and girls although the rates of offending are lower for females than for males between the ages of 12 and 21 years (Fergusson & Horwood, 2002). In fact it has been found that juvenile delinquency is three to four times more common among boys than girls and that boys commit more crimes than girls (Moffitt, et al., 2001; Odgers, et al., 2008). Furthermore, antisocial males are more violent than antisocial females, and the most active antisocial males also commit more crimes than the most active females. It has been found that fewer females than males continue their criminal career throughout the life-course (1 female to 10 males). Although the ratio for adolescent-limited antisocial behaviour is not as large (1 female to 1.5 males) (Moffitt, et al., 2001). Additionally, a severe form of antisocial behaviour is not as common in girls as in boys and it seems that antisocial behaviour takes a different form in girls. Girls appear less likely to be physically aggressive and engage in criminal behaviour, although they are more likely to demonstrate non-physical antisocial behaviours (Scott, 2004). Boys involved in violent delinquency have not been found to differ much from boys not involved in violent delinquency in terms of personality, while girls involved in violent delinquency do differ in this way from girls not involved in violent delinquency (Eklund & Klinteberg, 2005).

1.5 RISK CHARACTERISTICS

1.5.1 Early risk: Individual behavioural factors

Childhood and adolescent behavioural risk factors for developing antisocial behaviour are usually seen as hyperactivity, conduct disorder and impulsivity. The most recurrent and widely researched risk factor is the childhood disruptive behaviour condition, i.e. conduct disorder (Farrington, 2003, 2005a; Loeber, et al., 2002; Robins, 1978). The clinical description of conduct disorder is a repetitive and persistent pattern of behaviour in which the basic rights of others or major age-appropriate societal norms or rules are violated (e.g. bullying, physical fighting, burglary, truancy, lying, physical cruelty towards people or animals) (Dulcan, Martini, & Lake, 2003). A precursor to conduct disorder, usually diagnosed earlier in childhood than conduct disorder and considered a less severe form of disruptive behaviour disorder, is oppositional defiant disorder. This clinical condition includes argumentative, disobedient and defiant behaviour without the severe violation of the rights of other people (Dulcan, et al., 2003).

Loeber and colleagues have put forward a hierarchical developmental model of childhood oppositional defiant disorder, conduct disorder and attention deficit/hyperactivity disorder and adult antisocial behaviour (Loeber, et al., 2002; Loeber, et al., 2003). This model suggests that although a relatively large number of boys display oppositional defiant disorder early in childhood only a small proportion of these eventually qualify for the diagnosis conduct disorder. More specifically, it

proposes that those with oppositional defiant behaviour who engage in physical fights are particularly likely to develop conduct disorder and consequently, in its advanced and persistent form, antisocial personality disorder (APD). Attention deficit and hyperactivity do not play a major role in this model. However, it postulates that attention deficits and hyperactivity are associated with the early onset of problem behaviours (Loeber, et al., 2003). Attention-deficit/hyperactivity disorder, commonly referred to as ADHD in the DSM-IV-TR (APA, 2000) includes inattention, hyperactivity and impulsivity. Three subtypes are defined: the predominantly hyperactive and impulsive, the predominantly inattentive, and the combined subtype (Dulcan, et al., 2003). Research into antisocial behaviour has mainly focussed upon the hyperactive and impulsive type, although not usually in a diagnosed form according to any of the classification systems, thus implying a dimensional perspective.

Some researchers concentrated on childhood hyperactivity as a risk factor for antisocial behaviour (af Klinteberg, 1997; Farrington, 2005a; Rutter, 1997; Satterfield, 1978). Various pathways or mechanisms concerning hyperactivity as a risk factor have been proposed. For instance, in the biological area it is assumed that genetic factors operate indirectly through temperamental features such as hyperactivity, impulsivity and sensation seeking (Rutter, 2003) thus enhancing the risk of antisocial behaviour. Recently it was found, in a longitudinal study, that both conduct disorder and hyperactivity, were independently associated with antisocial behaviour in early adulthood (Simonoff, et al., 2004). Although researchers have oscillated between focusing on hyperactivity (Satterfield, 1978) and conduct disorder (Satterfield & Schell, 1997) as the core risk factor for antisocial behaviour hyperactivity seems to be the risk factor that recurs most in the models and theories which address the risk of later antisocial behaviour (Simonoff, et al., 2004).

In this thesis it is assumed that if only relying on conduct disorder as a precursor to antisocial behaviour one makes the fallacy of focusing on the behavioural aspects and disregarding personality. Hyperactivity can in some ways be seen as a personality feature, hence not only as a behavioural aspect emphasising the association between hyperactivity and impulsivity (Farrington, 2005a). Hyperactivity and impulsivity often appear together, for example in the diagnosis of ADHD (APA, 2000) and it has been suggested that an early start to offending can often be associated with both hyperactivity and impulsivity (Moffitt & Caspi, 2001). Furthermore, in research comparing the inter-relationship of core features of ADHD and conduct disorder it has been found that, apart from the substantial overlap between ADHD and conduct disorder, the level of impulsivity significantly predicts psychopathy in its conduct problem form (Colledge & Blair, 2001). It has thus been suggested that impulsivity may serve as an underlying mechanism for the development of ADHD and conduct disorder, as well as for their comorbidity (Colledge & Blair, 2001; Mathias, et al., 2007). However, it has not been established whether hyperactivity on its own is associated with an increased risk of developing antisocial behaviour, or whether the relationship is due to overlap with conduct disorder. Regarding sex differences, boys are more likely than girls to display hyperactivity, which may in part explain boys' higher risk of antisociality (Moffitt, et al., 2001).

1.5.2 Early risk: Social-interaction factors

1.5.2.1 Family

Parents have a very important socialisation function in the development of prosocial and acceptable behaviours. In other words, the parents 'teach' the child or adolescent acceptable socialisation, i.e. manners of living and relating to others. Thus, when parents are neglectful, inconsistent and/or harsh the outcome for the child or adolescent is often problematic (Lansford, Criss, Pettit, Dodge, & Bates, 2003). It is well documented that children of alcoholic and criminal fathers are at increased risk of antisociality in adolescence and adulthood (Otterström, 1946; Rydelius, 1981). In a review of childhood origins of antisocial behaviour it was reported that parental conflict and disrupted families predict adolescent antisocial behaviour (Farrington, 2005a). A number of indicators of family function have been found to be associated with antisocial behaviour in adolescence. Proximal factors, i.e. parental childrearing and the quality of the parent-adolescent relationship, have been found to be unique predictors of antisocial behaviour (Dekovic, et al., 2003; Otterström, 1946). Furthermore it has been found that both men and women who were severely neglected as children displayed more symptoms of antisocial behaviour and were also more often diagnosed with antisocial personality disorders than matched controls (Horwitz, et al., 2001). Yet the incidence of juvenile delinquency for neglected children is approximately 20%, thus not all neglected children become antisocial (Spatz Widom, 1997). It has been suggested that the outcome depends on where in the developmental process parenting plays a more or less important role. It has also been suggested that parenting effects may decrease over time (Reitz, Dekovic, Meijer, & Engels, 2006) because adolescents need greater autonomy with increasing age (Frick, Christian, & Wootton, 1999) with the influence of friends becoming increasingly important (Thornberry, 1987).

1.5.2.2 Friends

Influences of friends are assumed to be one of the most important predictors of adolescents' behaviour. In particular when children reach pre- and early adolescence, the influence of family and parenting seem to decrease and friends become more and more important in the socialisation process and the development of prosocial behaviours (e.g. Thornberry, 1987). A number of studies have found that the nature and quality of friendships in adolescence are highly important determinants of antisocial outcomes. Boys with low-quality friendships displayed greater increases in delinquent behaviour than boys with high-quality friendships (Poulin, et al., 1999). It has also been suggested that the friends influence on youths' behaviour varies as a function of different features of the friendship, such as the extent to which a young person identifies with friends, on the closeness of the relationship, as well as on the behaviour similarity (Jaccard, et al., 2005). It has additionally been found that friends from outside school have a particularly great impact on antisocial development (Kiesner, et al., 2004).

1.5.2.3 School

The school is an important place for children and adolescents because it is a place where they spend a large amount of time. As the effects of family and parenting decrease and those of peers increase the school environment becomes increasingly

important. It is generally agreed that the school environment and children's attachment to teachers not only affect academic achievement, but also moral, behavioural and social development (e.g. Kuperminc, Leadbeater, & Blatt, 2001). Adolescents who develop a positive social bond with their school are more likely to engage in prosocial behaviour and achieve well academically than adolescents who fail to establish a social bond. It has been suggested that a positive attitude towards school may protect against developing adjustment problems such as delinquency. The school may thus protect children from embarking on and maintaining norm-breaking and delinquent behaviours. Similarly, it has been hypothesised that adolescents who have poor bonds with school are at risk of developing delinquent behaviour. Previous findings suggest that there is indeed a relationship between poor school bonding and delinquency (e.g. Eklund & af Kinteberg, 2006; Maddox & Prinz, 2003; Simons-Morton, Crump, Haynie, & Saylor, 1999). However it is not yet known whether poor school bonding predicts delinquency, delinquency leads to poor school bonding, or if there are bidirectional effects over time. For example, it has been shown that adolescents reporting poor school bonding display more problem behaviours such as delinquency (Le, Monfared, & Stockdale, 2005; Payne, 2008; Simons-Morton, et al., 1999). It has also been shown that delinquent boys are less ambitious, do not achieve as well, and are not as well-adjusted in school as non-delinquent boys (Eklund & af Kinteberg, 2006).

1.5.3 Individual factors: Personality traits

Personality traits are both assumed and found to be relatively stable over time (Gustavsson, 1997; Strelau, 1998) and personality traits are assumed to predict behaviours (Caspi, et al., 1994). Models of personality have generated hypotheses about the causes of antisocial behaviour and the trait theory of personality has been influential. In a meta-analytic review of personality traits and antisocial behaviour, which included the personality questionnaires Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975) and Multidimensional Personality Questionnaire (MPQ; Sher & Trull, 1994) it was found that the dimension impulsivity/disinhibition was most strongly associated with antisocial behaviour, that neuroticism/emotionality appeared to be related to antisocial behaviour, although weakly, while extraversion/sociability, appeared, at best, to be weakly related. It was concluded that these results were somewhat contradictory to Eysenck's own hypothesis, which claimed extraversion to be most strongly associated with antisocial behaviour (Cale, 2006). However, the results are in line with Eysenck's redefined view of personality, in which he acknowledged that the extraversion construct actually includes both negative (impulsivity and extreme sensation-seeking) and positive (sociability) aspects, thus suggesting that the negative aspects of extraversion are associated with antisocial behaviour (Eysenck & Eysenck, 1978). However, the three Eysenckian super-factors, neuroticism, extraversion and psychoticism, have been criticised for being too broad and non-specific, and it has hence been argued that traits such as impulsivity and sensation-seeking are better predictors of delinquency than the super-factors (Gudjonsson & Sigurdsson, 2007; Levine & Jackson, 2004). Research has reported impulsivity, sensation seeking, non-conformity, aggression and forms of anxiety to be associated with antisocial behaviour (Caspi, et al., 1994; Krueger, et al., 1994; Ruchkin, Kuposov, af Klinteberg, Orelund, & Grigorenko, 2005). Additionally, different results for men and women are found, with for example, neuroticism apparently more strongly

associated with antisocial behaviour in girls although weakly (Romero, Luengo, & Sobral, 2001).

The Karolinska Scales of Personality (KSP) inventory was developed in order to quantify some theoretically important constructs that may be used to explore relationships between individual differences in behaviour and affect, with possible biologically underlying bases. The purpose was specifically to develop an instrument that could be used to measure personality correlates of psychopathology and to describe vulnerability factors of individuals at risk. The items were formulated or selected from available scales based on assumptions about the most salient dimensions of vulnerability for psychopathology. The inventory consists of 135 items, which have been classified into 15 scales based on theoretical assumptions about biologically-based dimensions of temperament underlying psychopathology (af Klinteberg, Schalling, & Magnusson, 1986). Scales included in the KSP and EPQ inventories have been classified into four groups on the basis of factor analyses (af Klinteberg, et al., 1992; af Klinteberg, et al., 1986) (a) introversion-extraversion related scales: (b) conformity-non-conformity related scales: (c) anxiety related scales: and (d) aggressivity related scales, including aggressivity and hostility scales (see Appendix 2 for description of the 15 scales). Research into KSP with antisociality has revealed that males with psychopathy tendencies have higher scores on the introversion-extraversion related scales concerning impulsivity and sensation seeking, the conformity-non-conformity scales and the anxiety-related scales. However, males with a history of early criminal behaviour only exhibited higher KSP scores on one of the introversion-extraversion related scales (KSP Detachment), thus not on impulsivity or sensation seeking. Furthermore, the early criminals exhibited lower socialisation and higher somatic anxiety than the control group (af Klinteberg, et al., 1992).

2 AIMS

2.1 GENERAL AIMS

The overall and general aim of the thesis was to investigate individual and social-interaction factors that over time may contribute to the development of antisociality, i.e. psychopathy tendencies and juvenile delinquency. The studies were conducted from an interactionistic and chiefly dimensional perspective using prospective longitudinal data.

2.2 SPECIFIC AIMS

- 1) To study whether hyperactive and non-hyperactive boys who went on to display psychopathy tendencies in adulthood would demonstrate more social-interaction problems and individual risks in childhood/early adolescence than those without psychopathy tendencies in adulthood.
- 2) To examine adult personality and level of psychopathy tendencies in the light of childhood hyperactive and non-hyperactive behaviours, controlling for early criminality. The purpose was two-fold: (1) to examine whether the hyperactive boys would constitute a risk group for the development of psychopathy tendencies; and (2) to assess the relationships between the clinically-rated and self-reported personality measures of psychopathy tendencies.
- 3) To study delinquent behaviour patterns in adolescent boys and girls, and the extent to which the delinquent behaviour patterns remain over a time period of one and a half years and, furthermore, to examine whether subgroups of adolescents with different delinquent behaviour patterns differ with respect to personality.
- 4) To investigate the association between adolescent boys' and girls' experiences of school bonding (i.e. school attachment, school commitment and teacher attachment) and self-reports of delinquency over time.

3 MATERIAL AND METHODS

3.1 PARTICIPANTS

The studies in this thesis are based on data from two longitudinal projects: *Young Lawbreakers as Adults* and *A short-term longitudinal project of adolescent problem behaviour: 1998-2000*.

3.1.1 Sample I: Young Lawbreakers as Adults

Sample I was used in Study I and II. The prospective longitudinal research project 'Young Lawbreakers as Adults' (YLA) was initiated in 1956. Boys aged 11-14 from a suburb close to central Stockholm and who were registered for a first time offence (i.e. a crime serious enough for prosecution if the boy was over 15 years old) were included in the study (n=192). These early delinquents were selected from reports of registered criminality from the criminal investigation department during the time-period 1959–1963. The comparison group (n = 95) was matched to the crime group in terms of age, social group, family type and residential area. At follow-up, 199 of the original 287 boys were examined at the mean age of 36 (range 32-40) years. Of these, 133 belonged to the original crime group and 66 to the comparison group. The main reasons for dropout were that they were either not willing or not available to be examined in the follow-up, or they had died prior to the follow-up examinations. Dropout analyses indicated that the occurrence of early behavioural/psychiatric symptoms was approximately equally distributed in the comparison and the crime groups on both examination occasions, thus implying a negligible likelihood of bias in the follow-up data (af Klinteberg, et al., 1992). Participation in the follow-up was voluntary and the participants received a modest remuneration.

Assessment methods in childhood included teacher estimates and structured teacher interviews in order to assess the boys' personality and behavioural features. A structured psychosocial interview performed by an experienced interviewer was conducted with the boys, tapping psychosocial activities concerning home environment, friendships, extracurricular activities, etc. A structured fixed-answer (yes/no answers) psychiatric interview with the boys' guardian (usually the mother) was conducted by two experienced psychiatrists. In the follow-up investigation, structured interviews and self-report questionnaires were conducted.

Study I included all subjects who took part in the follow-up (n=199). In Study II subjects with and without indications of childhood hyperactive behaviour at the age of 11–14 years were included. Thus, subjects with uncertain indications of hyperactive behaviour were excluded from the study (n = 40; of these 29 belonged to the original crime group and 11 to the control group). Due to some missing data on items randomly distributed over the personality scales for seven subjects, the final study group consisted of 152 male subjects (26 subjects with childhood hyperactive behaviour and 126 subjects with non-hyperactive behaviour). Of the final study group of 152 subjects, 98 belonged to the original crime group and 54 to the control group.

3.1.2 Sample II: A short-term longitudinal project: 1998-2000

Sample II was used in Study III and IV. All adolescents in eighth grade (14-15 years old; mean age 14.4) in a medium sized community in Sweden were invited to participate in the project. The target population constituted 1283 adolescents and their parents. Of these, 1243 (97%) adolescents were at school on the day of the first data collection and thus participated in the study. Some parents did not want their children to participate, thus 12 adolescents were excluded (Kerr & Stattin, 2000). The follow-up of these adolescents took place in the second term of ninth grade (spring of 2000) when they were 16 years old. In total, 1007 adolescents took part in the follow-up – 82 % of the adolescents who took part in the first data collection.

Assessment methods used in the project, analysed in the studies of the thesis, included questionnaires about delinquent behaviour, personality and school adjustment, all of which were administered and filled out by the adolescents.

The sample used in Study III comprised adolescents for whom there was complete data on the delinquent behaviour variables used for classifying the adolescents into subgroups, in total 901 (n=402 boys and n=499 girls). Study IV included subjects with for whom there was complete data on the variables used in the study (i.e. no missing values in any of the variables). Furthermore, four multivariate outliers were detected and thus removed from the sample; all four were boys and chiefly characterised by extreme delinquency. Thus the total sample in the study comprised 788 subjects (n=353 boys and n=435 girls).

3.2 MEASURES

3.2.1 Study I

This study used Sample I.

3.2.1.1 Childhood social characteristics

Friends

The measures of childhood social characteristics regarding friends were the two continuous five-point scale items *stability in contact with friends* (1 = often changes friends and has no steady contacts; 5 = always stays with the same friends – very strong solidarity and has a deeper contact with his friends than is usual for the age group); and *popularity* (1 = very unpopular among friends; 5 = very popular among friends), both of these were assessed by means of written teacher estimates.

Family

Two continuous five-point scale items were used to measure the social characteristics of home life: *emotional home climate* (1 = poor emotional home climate or open hostility with quarrels and disagreements; 5 = warm and affectionate emotional home climate, in which care of and interest in each other characterize relations) and *relation father-son* (1 = negative; 5 = positive). These derived from a structured psychosocial interview with the boys. The yes/no dichotomous question item *paternal alcohol addiction*, deriving from a psychiatric interview with the guardian, was also included.

3.2.1.2 Childhood individual characteristics

Adjustment ability

Individual characteristics in childhood included information about adjustment ability from the continuous 5-point item *adjustment in school* (1 = profound difficulties with adjustment and satisfaction; 5 = is very well adjusted and is very happy with the situation). This assessment was achieved by means of written teacher estimates and the yes/no dichotomous question items *difficulties with adjustment at home*, *difficulties with adjustment outside the home (not school)* and *truancy*, deriving from a psychiatric interview with the guardian.

Aggression

Information about *aggression affects* was derived from a continuous seven-point scale item (1 = unreflecting aggression in everyday situations that are not judged at all stressful – can occur several times per day, or with weeks in between; 7 = hardly ever displays rage or despair – is frightened by the aggression of others – aggression inhibited, tense and anxious – cannot assert himself with other children) derived from a structured interview with the teacher.

Intelligence

Intelligence (IQ) was assessed by means of the Terman Merrill intelligence test (Terman & Merrill, 1953).

Hyperactivity

Childhood hyperactive behaviour was derived from a construct of the dichotomous yes/no question items *motor restlessness* (MR) and *concentration difficulties* (CD). This information was obtained by a psychiatrist who clinically examined the boy and interviewed the boy's caregiver (usually the mother). The interview dealt with both current and retrospective information concerning the behaviour and experiences of the boy, as well as health status/problems. Thus the sub-groupings used in the present study were obtained by means of the following ratings: boys were characterised as hyperactive by indications (yes/yes) for both behaviour symptoms (MR and CD); boys were categorised as non-hyperactive if they displayed neither of the two behaviour symptoms (no/no). Boys with either of the two behaviour symptoms (no/yes or yes/no) were excluded from the study.

3.2.1.3 Adulthood measures

Mental health

Mental health was assessed both in childhood and adulthood. The assessment was conducted by the same experienced clinical psychologist and the diagnosis was based on a diagnostic ranking scheme, which had a range from normal through neurotic and borderline personality disorder, to character disorder or psychosis. At follow up, the diagnostic outcome from the childhood and follow-up examinations was compared and a difference-variable indicating improvement, no change or deterioration in mental health for each subject was created by the rater.

Psychopathy tendencies

Psychopathy was assessed by the Psychopathy Checklist (PCL; Hare, 1985) and 13 of the original 20 items were included (see af Klinteberg, et al., 1992). The PCL was completed by a psychologist on the basis of a semi-structured interview. Specific scoring criteria were available to the clinician, who scored each item on a three-point scale (0, 1, 2) according to how much each item applied to a given individual. In the revised version of PCL, the PCL-R (Hare, 1991) the total score for each individual can range between zero and 40 (Hare & Neumann, 2005). In North America the cut-off for psychopathy is 30 (Hare, Clark, Grann, & Thornton, 2000), whereas in Europe the corresponding figure is approximately 25 (Cooke & Michie, 1999). In the present study the psychologist found 13 items rateable based on a three-hour semi-structured in-depth taped interview (for item description see Appendix). Inter-rater reliability was high ($r = .85$, $p < .001$) when a second independent psychologist made ratings of psychopathy for 19 same subject interviews. The ratings were 'blind' to criminal activity groups and results from the personality inventories (see af Klinteberg, et al., 1992; Humble, af Klinteberg, & Schalling, 1991).

Out of the total PCL scores three subgroups were created; high PCL scores (10-26), intermediate PCL scores (3-9), and low PCL scores (0-2). The high PCL-R group comprised approximately the upper quartile of PCL scores in the total follow-up group (af Klinteberg, et al., 1992). Thus, because the cut off points are lower than in a clinical population of psychopaths, the individuals with high PCL scores are denoted as showing psychopathy *tendencies* rather than psychopathy *per se*. Furthermore, the criminal and control group subjects were aggregated because earlier results from the present sample indicated that the high PCL group subjects were distributed over both the control and the criminal groups (af Klinteberg, et al., 1992).

3.2.2 Study II

This study used Sample I.

3.2.2.1 Childhood measures

Hyperactivity

Childhood hyperactive behaviour was derived from the same hyperactivity construct as in Study I (see above).

Criminality

The original sample was selected with respect to early criminality. Two thirds of the total sample was registered for a first time offence for crimes committed after the age of 11 years and before the age of 15. The types of crimes committed were burglary, shoplifting, theft, and crimes involving motor vehicles. The remaining subjects had no registered criminality and therefore comprised the control group.

3.2.2.2 Adulthood measures

Personality questionnaires

Self-rated personality traits were measured in adulthood using two questionnaires: the Karolinska Scales of Personality (KSP; af Klinteberg, Schalling, & Magnusson, 1990;

Schalling, 1986; Schalling, Edman, & Åsberg, 1983; Schalling, Åsberg, Edman, & Oreland, 1987) and Eysenck's shortened version of the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975; Eysenck, Eysenck, & Barrett, 1985), including an impulsivity scale from the Impulsiveness-Venturesome-Empathy inventory (IVE; Eysenck & Eysenck, 1978). The inventories were administered to the subject at the mean age of 35 (range 32-38 yrs) (af Klinteberg, et al., 1992).

The internal consistency reliability (Cronbach's alpha) coefficients for the self-reported introversion-extraversion-, conformity- and anxiety-related scales have in representative normal populations been reported to range from 0.74 to 0.89, whereas the range for the aggressivity-related scales are reported to range from 0.24-0.65 (see (af Klinteberg, et al., 1990; Gustavsson, Weinryb, Göransson, Pedersen, & Åsberg, 1997). Reliability is assumed to be low for the aggressivity-related scales due to the fact that they only include five items that have to cover the entire construct, hence the scale items are quite heterogeneous and the specificity within each scale has been found low (Gustavsson, 1997).

The personality scales of specific interest for Study II, according to theoretical assumptions that individuals with psychopathy tendencies are impulsive, experience somatic anxiety, do not conform to moral standards and have externalised aggressiveness, were the following: (a) KSP *Impulsiveness*, KSP *Monotony avoidance*, IVE *Impulsiveness*; (b) KSP *Socialisation*, EPQ *Psychoticism*; (c) KSP *Somatic anxiety*, KSP *Muscular tension*; (d) KSP *Verbal aggression*, KSP *Irritability*, KSP *Suspicion*, KSP *Guilt*. Descriptions of extreme scores for the personality scales applied are given in Appendix 1 in the original article of Study II.

Psychopathy tendencies

Psychopathy tendencies included the same 13 PCL (af Klinteberg, et al., 1992) items as in Study I. The high PCL group subjects in Study II were the same as in Study I, thus comprising approximately the upper quartile of PCL scores for the total follow-up group (PCL scores 10-26). In Study II the low PCL group comprised subjects with scores between 0-9. Thus, as in Study I, the cut off point for the high PCL group was lower than for clinical groups of psychopaths. Hence, also in Study II, high PCL scores indicate psychopathy *tendencies* rather than psychopathy *per se*.

3.2.3 Study III

This study used Sample II.

3.2.3.1 Delinquent behaviour

The adolescents completed a questionnaire about various delinquent behaviours in the 8th and 9th grade. The behaviours were rated on 5-point scales and referred to delinquent acts that had taken place during the last year (1=No, never; 2=1 time; 3=2-3 times; 4=4-10 times; 5=More than 10 times). Self-reported delinquent behaviour was divided into minor, serious and violent delinquency scales. For a description of the items used in each scale, see Appendix 1 in the original manuscript of Study III.

3.2.3.2 *Personality traits*

The self-report questionnaire Karolinska Scales of Personality – Junior version (KSP-J; Ekselius, von Knorring, & af Klinteberg, 2003) – was administered to the participants in the 8th grade. The questionnaire comprises 135 items and covers 15 personality scales: Impulsiveness, Monotony Avoidance, Detachment, Socialization, Social Desirability, Somatic Anxiety, Muscular Tension, Psychic Anxiety, Psychasthenia, Inhibition of Aggression, Verbal Aggression, Indirect Aggression, Irritability, Suspicion and Guilt. The reliabilities and description of high/low scores are presented in Appendix 2 in the original manuscript of Study III.

3.2.4 **Study IV**

This study used Sample II.

3.2.4.1 *Delinquent behaviour*

The adolescents completed the same questionnaire about a variety of delinquent behaviours as in Study III. For this study, however, a continuous sum variable including all types of crimes was created (for delinquency scale items see Appendix 1). Z-scores for each item were calculated in order to give serious and uncommon delinquent behaviours more weight.

3.2.4.2 *School bonding*

Questionnaires including items about school bonding were also completed by the adolescents in the 8th and 9th grade. The questions were rated on 5-point scales, with 1 indicating good bonding/attachment and 5 poor bonding/attachment. The construct School bonding comprises three unique dimensions: School attachment, School commitment and Teacher attachment; and one closely related dimension: Teacher defiance. The four dimensions were created based on theory and further supported by means of orthogonal (Varimax) factor analytic solution of the ten school-related items in the self-report questionnaire (see Appendix 2 in the original manuscript of Study IV for dimension items and rating scales for the school bonding dimensions).

School attachment

School attachment refers to feelings for and caring about school, thus feelings about the school itself, rather than the school personnel, hence a sense of belonging and feeling comfortable at school – reliabilities (Cronbach's alpha) T1 0.73, T2 0.77.

School commitment

School commitment refers to the students' personal investment in schoolwork, including future achievements and striving for good grades – reliabilities (Cronbach's alpha) T1 0.69, T2 0.78.

Teacher attachment

Teacher attachment refers to the interpersonal relations with school personnel experienced by the adolescents, including feelings of being supported and understood by the personnel – reliabilities (Cronbach's alpha) T1 0.78; T2 0.81.

Teacher defiance

Teacher defiance refers to subjective experiences of hostility towards teachers as experienced by the students – reliabilities (Cronbach's alpha) T1 0.74; T2 0.74.

3.3 DATA ANALYSES

Both variable-oriented and person-oriented statistical methods were used in the four studies of the present thesis.

In Study I one-way analyses of variance (ANOVA) were conducted to test for group mean differences and multiple comparisons between groups were examined by using Scheffé *post hoc* tests. Chi-square tests of categorical data were conducted. Where significant Chi-square results ($p < .05$) were obtained, the EXACON method (Bergman & El-Khoury, 1987) was applied to test the frequencies obtained in the contingency table cell-wise as compared to the expected frequencies according to a chance model. Lastly, univariate logistic regression analyses were applied to study odds ratios for subjects with risk indications in the respective variables.

In Study II statistical methods included a two-way factorial analysis of variance with two independent variables and a covariate. Levene's test revealed heterogeneity of variances in some of the analyses. However, the differences were not pronounced and thus assumed not to affect the results. For illustrative purposes, mean group personality scale scores were then transformed into age- and sex-related *T*-scores ($M= 50$; $SD= 10$), based on a randomly selected (20-34 yrs) Swedish population (Bergman & Schalling, 1981). Definition of abnormality on the scales was set at 1 SD (or more) above or below the mean. Student's *t*-tests (one-tailed) were conducted and the EXACON method was applied (Bergman & El-Khoury, 1987).

In Study III McNemar's test was used to examine changes in the occurrence of behaviours over time. Ward's method of hierarchical cluster analysis was applied in order to identify individuals with similar behaviour patterns (Bergman, 2000). EXACON was used to analyse movement between clusters over time, while one-way analyses of variance (ANOVA) with Tukey's *post hoc* test were performed in order to test for group mean differences. Lastly, for illustrative purposes, mean group personality scale scores were transformed into sex-related normative *T*-scores ($M=50$, $SD=10$).

In Study IV path analysis was conducted in Mplus (Muthén & Muthén, 2007) and multigroup analyses were performed to test for sex differences. The chi-square difference between the constrained and the unconstrained model was computed in order to test for sex differences. Furthermore, Student's *t*-tests (two-tailed) and Pearson product-moment correlation coefficients were conducted.

4 RESULTS AND DISCUSSION

In the following section main and specific aims, hypotheses, results and brief discussions in the light of previous research findings for each of the four studies are presented.

4.1 STUDY I

Are Negative Social and Psychological Childhood Characteristics of Significant Importance in the Development of Psychosocial Dysfunctioning?

Main aim

The aim was to study whether hyperactive and non-hyperactive boys who went on to display psychopathy tendencies in adulthood would demonstrate more social-interaction problems and individual risks in childhood/early adolescence than those without psychopathy tendencies in adulthood.

Specific aims and hypotheses

The specific aim was to examine hyperactive and non-hyperactive boys according to low, intermediate and high psychopathy tendencies as measured by PCL (Hare, 1985) in adulthood. Hyperactive behaviour was defined as a combination of psychiatric indications of motor restlessness and concentration difficulties. It was hypothesised that both the hyperactive and the non-hyperactive children who were estimated to have high psychopathy tendencies at adult age would show significantly more difficulties with social-interaction and individual childhood risk characteristics in terms of social factors of family and friends and adjustment abilities at school and at home than the males estimated to have low psychopathy tendencies.

Results

It was found that hyperactive boys displaying psychopathy tendencies in adulthood had problems with friends. They also displayed more aggression and were more likely to play truant than the hyperactive boys without subsequent psychopathy tendencies. Non-hyperactive boys with psychopathy tendencies in adulthood were found to have had a problematic family environment. They also played truant more often and displayed more adjustment difficulties than the non-hyperactive boys without subsequent psychopathy tendencies. Lastly, the risk of developing psychopathy tendencies was five-fold for the boys with adjustment difficulties at home and three-fold for the boys who had a negative relationship with their father during childhood. Results for development in mental health over time indicated that unstable contact with friends, poor emotional home climate and negative relations with the father were more common in the group experiencing deteriorating mental health over time. The risk of deteriorating mental health over time was more than twice as high for those who had experienced a negative relationship with their father and had displayed adjustment difficulties at home during childhood.

Discussion

The results of the present study reveal that psychopathy tendencies in adulthood were preceded by individual and social-interaction problems in childhood. Different findings were revealed for the hyperactive and the non-hyperactive groups. Hyperactive boys who developed psychopathy tendencies had difficulties with friends. Non-hyperactive boys were more likely to come from malfunctioning families and have pronounced adjustment difficulties.

Although hyperactivity in childhood has often been found to precede psychopathy tendencies in adulthood, it is more an indication than a rule, i.e. many hyperactive children do not display psychopathy traits in adulthood (af Klinteberg, 1997; Satterfield, 1987). In the present study, the hyperactive boys, with subsequent psychopathy tendencies had, in childhood, problems with friends, were aggressive and were more likely to play truant than the boys with no subsequent psychopathy tendencies. These results suggest that hyperactive behaviour in itself causes problems in interaction with the environment, especially contact with friends. This supports previous findings which have suggested that hyperactive children often have problems with relations (Aunola, Stattin, & Nurmi, 2000; Stattin & Magnusson, 1996; Tremblay & LeMarquand, 2001; Weiss & Trokenberg Hechtman, 1986). Furthermore, it has been suggested that such difficulties with interaction with friends may be associated with aspects of psychopathy, in particular that such individuals lack empathy and have a callous attitude towards others (Wootton, Frick, Shelton, & Silverthorne, 1997).

In the present study, non-hyperactive boys not previously considered to be at risk of psychopathy tendencies were found in some cases to have developed psychopathy tendencies nevertheless. Particularly the non-hyperactive boys who, in childhood, had a poor emotional home climate, poor adjustment abilities and engaged in truancy, displayed an increased risk of developing psychopathy tendencies. Negative father-son relations and adjustment difficulties at home indicated a particularly high risk of developing psychopathy personality at adult age (a three and five-fold risk respectively). The results thus clearly indicate that hyperactive behaviour in childhood is not the only contributor to psychopathy traits in adulthood; the atmosphere in the home environment and parental functioning are also important in determining whether 'non-risk' individuals go on to develop psychopathy tendencies. Previous studies have suggested the family environment to be crucial. It has been found, for example, that maltreatment and neglect in childhood increase the risk of psychosocial dysfunction (Spatz Widom, 1997).

4.2 STUDY II

Exploring Adult Personality and Psychopathy Tendencies in Former Childhood Hyperactive Delinquent Males

Main aim

The aim was to examine adult personality and level of psychopathy tendencies in the light of childhood hyperactive and non-hyperactive behaviour, controlling for early criminality.

Specific aims and hypotheses

The first specific aim was to investigate whether those children who were characterised as hyperactive at a medical examination at the age of 11-14 constituted a risk group for the development of psychopathy tendencies at adult age. The second specific aim was to assess whether those with psychopathy tendencies according to the PCL (Hare, 1985) would also demonstrate extreme personality scale scores for the psychopathy-related personality traits measured by KSP (af Klinteberg, et al., 1990; Schalling, 1986; Schalling, et al., 1983; Schalling, et al., 1987), EPQ (Eysenck & Eysenck, 1975; Eysenck, et al., 1985) and IVE (Eysenck & Eysenck, 1978). It was hypothesised that those with psychopathy tendencies according to the PCL (Hare, 1985) would display extreme scores on the introversion-extraversion related scales impulsivity and sensation seeking, on the conformity-nonconformity related scales socialisation and psychoticism, on the anxiety-related scales somatic anxiety and muscular tension, and on the aggressivity-related scales verbal aggression, irritability, suspicion and guilt.

Results

As hypothesised, it was found that among the males with psychopathy tendencies in adulthood there was an overrepresentation of childhood hyperactive boys. As expected, males with psychopathy tendencies scored higher than males without psychopathy tendencies on all of the personality dimensions studied except somatic anxiety and guilt, when criminality had been controlled for. Former childhood hyperactive males displayed higher impulsivity and hostility scores than males without a history of hyperactive behaviour, when criminality had been controlled for. Furthermore, former childhood hyperactive males were characterized by extreme personality scale scores on several psychopathy-related personality scales; impulsivity, monotony avoidance, socialisation, psychoticism and muscular tension. Former childhood non-hyperactive males, on the other hand, only displayed extreme scores for the broad form of impulsivity, sensation seeking and socialisation. Interestingly also, there was a significant interaction effect between hyperactivity and PCL for KSP impulsiveness.

Discussion

The findings of this study support the notion that childhood hyperactivity is a crucial risk indicator in the development of psychopathy tendencies. In line with previous assumptions, our results indicate that there is a *subgroup among hyperactive children* with an elevated risk of developing forms of psychosocial disturbance, e.g. psychopathy tendencies at adult age (af Klinteberg & Orelund, 1995; Biederman, et al., 1996; Comings, et al., 1996; Eklund & af Klinteberg, 2003). This is in line with suggestions that psychopathy is a developmental disorder (Viding, 2004).

Interestingly, the results support the idea that it might be possible to assess psychopathy tendencies by means of personality questionnaires, since males with psychopathy tendencies demonstrated scores in the expected direction for the personality dimensions examined, even when criminality had been controlled for. The PCL and the psychopathy-related scales of KSP, EPQ and IVE in fact overlap and we therefore suggest that they measure the same underlying features.

The findings of the present study suggest, moreover, that hyperactive males with subsequent psychopathy tendencies displayed more extreme psychopathy-related personality traits on some of the traits measured, than non-hyperactive males with psychopathy tendencies. There seem to be qualitative differences between males with childhood hyperactivity or no hyperactivity and subsequent psychopathy tendencies, indicating that the psychopathy tendencies in males with a history of childhood hyperactive behaviour may be more severe in terms of personality features than the psychopathy tendencies seen in males without childhood hyperactivity.

4.3 STUDY III

Delinquent Behaviour Patterns in Adolescence: Development and Associated Personality Traits

Main aim

The main aim was to study delinquent behaviour patterns in adolescent boys and girls; the extent to which the delinquent behaviour patterns remain over a time period of one and a half years; and whether subgroups of adolescents with different delinquent behaviour patterns differ with respect to personality.

Specific aims and hypotheses

More specifically, the first aim was to examine whether there are delinquent behaviour patterns in adolescence, thus categorising adolescents into subgroups of individuals displaying similar delinquency patterns, according to self-reported delinquent behaviours. We also investigated the short-term individual development of the delinquency patterns over time. This was carried out on two occasions in order to analyse whether the same patterns of delinquent behaviour were identified both times, for boys and girls respectively. It was hypothesised that adolescents who display violent and serious delinquency would continue to do so over time. Furthermore, we tested whether personality characteristics previously associated with antisocial behaviour were related to adolescents with delinquent behaviour in general, or only to specific subgroups of delinquent adolescents.

Results

The results revealed that there was an overall reduction in involvement in delinquent behaviour between the 8th and 9th grade for both boys and girls. However, there was an increase in more serious delinquency for boys. Furthermore, four subgroups (clusters) of delinquent behaviours were identified for boys and girls in the 8th and 9th grade, primarily characterised by well adjusted behaviour, minor offences, serious delinquency and violent delinquency. Individual development in these clusters revealed that adolescents displaying a certain behaviour pattern in the 8th grade continued to display the same pattern in the 9th grade. However, some boys and girls involved in minor delinquency were more likely than expected to develop serious delinquency over time. In terms of personality it was found that most of the personality traits displayed by the three delinquency groups differed from those displayed by the well-adjusted group for both boys and girls. Particularly boys in the serious delinquency cluster had significantly higher scores for somatic anxiety and psychastenia and lower scores for

socialisation than boys in the well-adjusted cluster. Girls in the serious delinquency cluster had higher impulsivity, monotony avoidance and verbal aggression as well as lower socialisation and inhibition of aggression compared to girls in the well-adjusted cluster.

Discussion

The fact that four replicable clusters could be identified on both occasions for boys and girls indicates that subdivision into minor, serious and violent delinquency may be profitable in future research on juvenile delinquency. In terms of individual development it was found that adolescents tended to display similar behaviour patterns, although some adolescents with minor delinquency developed serious delinquency, indicating a progression towards more serious and versatile delinquent behaviour. These results therefore support the earlier call for a more detailed distinction between offender types and groups in adolescence (Loeber & Stouthamer-Loeber, 1998). The personality traits in the delinquency clusters suggest that the personality *profiles* in the delinquency subgroups tend to take somewhat different forms and contain different aspects. Particularly boys with a pattern characterised by serious delinquency exhibited an extreme personality profile on personality scales tapping high somatic anxiety and low psychic strength as well as extremely high non-conformity. Girls with a pattern characterised by serious delinquency exhibited extreme impulsivity and sensation seeking, high out-acting aggression and high non-conformity. We concluded that a more detailed distinction between different delinquent behaviour subgroups is indeed more valuable than viewing delinquent adolescent as a homogenous group.

4.4 STUDY IV

Poor School Bonding and Delinquency over Time: Bidirectional Effects and Sex Differences

Main aim

The aim was to investigate the connection between adolescent experiences of school bonding (i.e. school attachment, school commitment, teacher attachment) and self-reports of delinquency over time.

Specific aims and hypotheses

The specific aim was to investigate the association between the school bonding dimensions of school attachment, school commitment and teacher attachment and delinquency for boys and girls separately. This was investigated in order to ascertain whether there might be bidirectional effects between the different school bonding dimensions and delinquency over time and to allow us to test sex differences in the associations. The dimension teacher defiance was included in the model with teacher attachment, since it was assumed that hostility towards teachers might affect the relationship with the teacher. It was hypothesised that there might be bidirectional associations between school bonding and delinquency, and that these associations could differ for boys and girls.

Results

The results for boys and girls together revealed reciprocal effects between delinquency and school bonding variables over time. When defiance towards teachers was entered in the model the associations between teacher attachment and delinquency no longer predicted worse teacher attachment over time, whereas teacher defiance did. Multigroup analyses were conducted to test for sex differences. It was found that poor school attachment significantly predicted delinquency over time for boys but not for girls and that delinquency significantly predicted poor school attachment over time for girls but not for boys. Poor school commitment significantly predicted delinquency over time for boys but not for girls. Lastly, poor teacher attachment predicted delinquency over time for both boys and girls. However, a poor teacher attachment was more strongly associated with delinquency over time for boys than for girls.

Discussion

Other researchers have suggested that the direction of effect between poor school bonding and delinquency is not always clear, i.e. that studies report contradictory results (e.g. Bryant, Schulenberg, Bachman, O'Malley, & Johnston, 2000; Maddox & Prinz, 2003). However, previous research on the association between poor school bonding and adolescent delinquency has mainly consisted of cross-sectional studies, which makes it impossible to draw conclusions about the direction of effects. Even though some studies have used a longitudinal design, most of them have nevertheless only focused on the role that poor school bonding plays in adolescent delinquency and few have examined sex differences. In the present study we found that, when analysing the total group, all aspects of poor school bonding predicted delinquency over time *and* that delinquency predicted poor school bonding, thus implying bidirectional effects. However, when analysing boys and girls separately the direction of effects differed. We concluded that adolescent boys' delinquency propensity is affected by all school bonding dimensions, implying that it is crucial for boys to experience school itself, school work, and teacher relations as fruitful and harmonious in order to stay on a prosocial developmental path. In terms of adolescent girls' delinquency propensity, on the other hand, their perceived relationship with their teachers appears to be of major significance. It suggests not only that we need to understand that there are differences in these directions between boys and girls but also that adolescents with negative attitudes towards school may already be on of the way to developing more severe antisocial behaviours, which in the long run may have detrimental effects for the individual, his/her family and friends, and the community as a whole.

5 GENERAL DISCUSSION

The general aim of the present thesis was to explore factors in childhood and early adolescence that over time may contribute to the development of antisociality, in particular psychopathy tendencies and juvenile delinquency. The factors explored included individual factors of childhood hyperactivity and adulthood personality traits, and social-interaction-factors of emotional family climate, peer relations and school bonding. An interactionistic perspective was applied, suggesting that this development could depend on several factors both within the individual as well as in the immediate environment. An interactionistic perspective assumes furthermore that individuals do not all develop in the same way. It assumes rather that there is individual variation in development, hence suggesting that person-oriented methods may be a valuable supplement to variable methods in teasing out more detailed differences in the developmental process (Bergman & Magnusson, 1997) .

In addition to the interactionistic perspective, a dimensional rather than categorical approach was applied, hence not relying on categorical cut-off points for disorders. Psychopathy tendencies and juvenile delinquency were studied. The possible advantages of such an approach are that more subtle and hidden vulnerability factors may be found, giving us a deeper understanding of what contributes to the development of antisociality. In other words, these risk characteristics in early adolescence may remain hidden if fixed cut off points are used.

5.1 MAIN FINDINGS

Interestingly different childhood risk characteristics were found for the hyperactive versus the non-hyperactive subgroup with subsequent adulthood psychopathy tendencies (Study I). The hyperactive subgroup with subsequent psychopathy tendencies had chiefly displayed problems in relation to friends. Low quality friendship was not found in the non-hyperactive subgroup with subsequent psychopathy tendencies, possibly suggesting that some hyperactive boys have problems with friendships due to lack of empathy and callousness, both which are aspects of psychopathy (Wootton, et al., 1997). The non-hyperactive subgroup with subsequent psychopathy tendencies did, on the other hand, have problems of a social-interaction character, in particular in the form of a cold and uncaring home climate. Thus possibly indicating that a subgroup among non-hyperactive boys who experience a cold and uncaring home climate are at higher risk of subsequent psychopathy tendencies than boys who grow up in a warmer and more caring home climate. This result is in line with previous findings which indicate that it is more common to become antisocial if one has been neglected as a child (Horwitz, et al., 2001; Spatz Widom, 1997). The results from Study I thus suggest that *both* hyperactive and non-hyperactive boys may be at risk of psychopathy tendencies, although possibly with different risk indicators.

The results from Study II suggest that there is a subgroup of hyperactive boys who are at risk of developing psychopathy tendencies. This is in line with previous research (e.g. af Klinteberg & Orelund, 1995). The results also demonstrate that former childhood hyperactive males exhibited more extreme psychopathy-related personality

traits, further supporting the assumption that hyperactivity is a risk indicator for psychopathy. Lastly, results from Study II suggest that personality inventories, and in particular the psychopathy related personality scales of the KSP, EPQ and IVE, may be used as an indicator of psychopathy tendencies, as previously discussed in relation to other personality inventories (Farrington, 2005b).

In studies III and IV, juvenile delinquency was investigated in terms of behavioural aspects of antisociality. Study III studied whether it is possible to group adolescents with delinquent behaviour of differing gravity into different clusters, and explored whether the same clusters of adolescent delinquent behaviour remained over time. Some researchers have questioned whether there is anything to be gained by studying criminality in terms of seriousness (Moffitt, 1993). Others have stressed the importance of viewing delinquency as something heterogeneous, with different criminal behaviour constellations differing in severity and different outcomes (Loeber & Stouthamer-Loeber, 1998). The results from Study III reveal that it may indeed be of value to study adolescents with delinquent behaviour of differing severity because similar behaviour patterns were found over time. In addition, they revealed that personality to some extent corresponded differently to the delinquent behaviour groupings. More specifically, the boys in the serious delinquency subgroup were less socially adjusted and more anxious than the well-adjusted boys. Girls who engaged in serious delinquency were more impulsive, sensation seeking, less socially adjusted and were more aggressive than the well adjusted girls.

In Study IV juvenile delinquency and aspects of school bonding as perceived by the adolescents themselves were studied. This is an important approach in research on antisociality in adolescence since school has a great impact on the youngsters' lives, not least because they spend a large amount of their time at school (e.g. Thornberry, 1987). Interestingly, we found that poor school attachment and commitment as well as poor teacher attachment were stronger determinants of delinquency for males than for females. Poor teacher attachment was the *only* determinant of delinquency for females.

5.2 METHODOLOGICAL CONSIDERATIONS

The studies in the present thesis have both limitations and some strengths. In general, longitudinal studies have major advantages over cross-sectional studies, because they offer the possibility to study the natural history of development, continuity and change over time. They may thus enable us to identify the developmental sequences and the effect of life events that lead to antisociality. However, it is difficult to draw conclusions about causality and direction of effect because it is difficult to control for effects over time and also because hidden bi-directional effects may be present. Similarly, some variables included in the analyses may be ambiguous as we do not know exactly how they operate (Loeber & Farrington, 1997). In addition, instrumentation, methods and theories used in long-term longitudinal studies such as YLA (Study I and II) can be out of date. An important quality of the YLA, however, is that it is a prospective longitudinal study, which has clear advantages over retrospective longitudinal studies.

A specific limitation of Study I and II is that YLA only includes male subjects and that a shortened version of PCL was applied. The hyperactive group studied was much smaller than the non-hyperactive group. Thus, because of low power the results must be interpreted with caution, since non-significant group differences may be present for some of the variables in the hyperactive group in both Study I and II. Similarly, in Study III findings about the personality correlates of delinquent behaviour should be interpreted with caution because of low power in some of the analyses due to small subgroup sizes. The results of these analyses may possibly have led to some non-significant group differences.

In both Study III and IV adolescents who dropped out of the study reported more delinquent behaviour and poorer school bonding (Study IV) than adolescents who remained in the study over both data collections. As a consequence the sample included in the analyses of both these studies was better adjusted than the original group of adolescents. This may have led to an underestimation of delinquent behaviour among adolescents at this age (Study III), yet without any drop-out the results would most likely have been stronger. An additional strength of Study III and IV is the fact that the sample was sufficiently large to study boys and girls separately, and to study sex differences as conducted in Study IV. Thus, the results of Study III and IV may broaden our understanding of the development and possible precursors of female delinquent behaviour, as sought by Hipwell and collaborators (2007).

5.3 REFLECTIONS AND FUTURE DIRECTIONS

The studies in the present thesis have primarily concerned two antisociality outcomes: psychopathy tendencies in adulthood (Study I and II) and juvenile delinquency (Study III and IV). These are two different outcomes in which psychopathy tendencies concern personality features and juvenile delinquency involves behaviour.

Studying personality in antisociality subgroups was found to be fruitful. Study II showed that psychopathy-related personality scales can be used as indicators of psychopathy tendencies. In Study III personality scale scores in the delinquency clusters indicated more extreme personality traits in the serious delinquency clusters for both boys and girls. Seriously delinquent boys exhibited more extreme scores on non-conformity and anxiety-related personality scales and seriously delinquent girls exhibited more extreme scores on impulsivity, sensation seeking non-conformity and out-acting aggression. These differences do not however indicate sex differences in personality since differences between the sexes were not tested. Future research should focus on sex differences in personality in more homogeneous delinquency subgroups. By applying personality inventories detailed information on a personality level can be detected and may thus bring out subtle differences in antisociality. Studying personality in subgroups of violent or serious offending, or in subgroups of individuals with, for example, a history of neglect and maltreatment who display psychopathy tendencies would lead to a better understanding of individuals at risk of persistent antisociality. This is in line with previous suggestions that it might be fruitful to study subgroups of individuals engaging in criminality (Loeber & Stouthamer-Loeber, 1998). Similarly, the idea of studying antisocial individuals in more homogeneous and thus smaller

subgroups, gave some interesting results in the present thesis. Hyperactive and non hyperactive boys with subsequent psychopathy tendencies not only displayed different levels of psychopathy-related personality traits at adult age (Study II), but they also seemed to have different types of social interaction difficulties in childhood: the hyperactive boys had problems with friends while the non-hyperactive boys had problems with family (Study I). However it may be of specific importance to study differences between the sexes in antisociality in the future. The results of Study IV give important indications of this need, since it found that the association between school bonding and delinquency was different for boys and girls. There are surely more differences between the sexes than previously suggested by Moffitt (Moffitt, et al., 2001). The answer may lie in studying them in more homogenous subgroups in order to enhance the specificity of risk factors for smaller subgroups.

The findings of the studies in the present thesis suggest that it is important to study juvenile delinquency in smaller and more homogenous subgroups and that it is also important to study psychopathy tendencies in subgroups. In Study III juvenile delinquency was studied in terms of minor offences, serious delinquency and violent delinquency. In Study I and II subgroups of psychopathy tendencies with previous indications of hyperactivity or no hyperactivity were studied. The results of these studies suggest that it is valuable to study risk characteristics in smaller and more homogenous subgroups. Such studies can, in the long-term, give valuable information about how to prevent and treat individuals at risk of antisociality. We now understand that it is not possible to prevent and treat large heterogeneous groups of antisocial individuals since they display different risk characteristics and will therefore most likely also respond differently to treatment.

5.4 CONCLUDING REMARKS

In conclusion, the most important results from the studies in the present thesis demonstrate that both hyperactive and non-hyperactive boys are at risk of developing psychopathy tendencies, with the hyperactive boys having problems with friends and the non-hyperactive boys experiencing a poor domestic climate. However, hyperactive boys are at particular risk of developing psychopathy tendencies. Furthermore, it seems that the KSP, EPQ and IVE psychopathy-related personality scales may be used as indicators of psychopathy tendencies. Smaller subgroups of adolescents engaged in specific types of delinquency behaviours are useful, as the same groupings can be found over time. A further finding is that the groupings of delinquent behaviour correspond somewhat differently to the personality traits assessed. Boys involved in serious delinquency were more non-conforming and more anxiety prone and displayed more extreme scores for impulsivity, non-conformity, anxiety and aggression. Girls involved in serious delinquency were more impulsive, sensation seeking, non-conforming and aggressive than their well-adjusted counterparts. Lastly, an association between delinquency and school bonding was revealed. More specifically, boys' delinquency propensity was affected by all aspects of school bonding, whereas only teacher relations were of importance for girls. The differences between the sexes in these results are of importance for detecting boys and girls who are at risk and for preventing them from continuing on an antisocial path in life. One important message

from these studies is that it is important not to consider all antisocial individuals as a homogenous group. It is more meaningful to study them in smaller homogenous subgroups and to be aware that not all individuals with similar sets of risk factors develop in the same way. Minimal differences in risks and individual features may thus set a person on a completely different path in life. Being aware of this may lead to a deeper and fuller understanding of individual differences in antisociality.

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APPENDIX 1

Description of the 13 PCL items assessed in Study I and II (YLA)

PCL-R Items	Item description
PCL 1	Glibness/Superficial Charm
PCL 2	Grandiose Sense of Self-Worth
PCL 3	Need for Stimulation/Proneness to Boredom
PCL 5	Cunning/Manipulative
PCL 6	Lack of Remorse or Guilt
PCL 7	Shallow Affect
PCL 8	Callous/Lack of Empathy
PCL 10	Poor Behavioural Controls
PCL 13	Lack of Realistic, Long-Term Goals
PCL 14	Impulsivity
PCL 15	Irresponsibility
PCL 16	Failure to Accept Responsibility for Own Actions
PCL 17	Many Short-Term Marital Relationships

APPENDIX 2

Description of high scores of the IVE, EPQ and KSP scales

Personality Scales	Description of high scores
<i>Introversion-Extraversion-related scales</i>	
Impulsiveness (IVE)	Risk-taking, non-planning (both KSP imp. & monotony avoid.)
Impulsiveness (KSP)	Acting on the spur of the moment, non-planning, impulsive
Monotony avoidance (KSP)	Avoiding routine, need for change and action (Sensation Seeking)
Detachment (KSP)	Avoiding involvement with others, withdrawn, 'schizoid'
<i>Conformity-nonconformity related scales</i>	
Psychoticism (EPQ)	Egocentric, non-conforming, lack of feeling of empathy
Socialisation (KSP)	Positive childhood experiences, good school and family adjustment
Social desirability (KSP)	Socially conforming, friendly, helpful (or 'faking good')
<i>Anxiety-related scales</i>	
Somatic anxiety (KSP) ^a	Autonomic disturbances, restless, panicky
Muscular tension (KSP) ^a	Tense and stiff, not relaxed
Psychic anxiety (KSP) ^b	Worrying, anticipating, lacking self-confidence, sensitive
Psychasthenia (KSP) ^b	Easily fatigued, feeling uneasy when facing new tasks
Inhibition of aggression (KSP) ^b	Non-assertive, sad rather than angry when scolded, cannot speak up
<i>Aggressivity related scales</i>	
Indirect aggression (KSP) ^c	Sulking, slamming doors when angry
Verbal aggression (KSP) ^c	Getting into arguments, telling people off when annoyed
Irritability (KSP) ^c	Irritable, lacking patience
Suspicion (KSP) ^d	Suspicious, distrusting people's motives
Guilt (KSP) ^d	Remorseful, ashamed of bad thoughts

^a nervous tension and distress; ^b cognitive-social anxiety; ^c aggression; ^d hostility

Adapted from (af Klinteberg, et al., 1992).