From The Division of Forensic Psychiatry
Neurotec Department
Karolinska Institutet, Stockholm, Sweden

Antisocial behaviour in clinically referred boys:

Early identification and assessment procedures in child psychiatry

Pia Enebrink

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Key words: Antisocial behaviour, conduct disorder, early identification, child psychiatry, boys, risk assessment, EARL-20B, callous-unemotional traits, predictive validity, narrative interviews

To Jacob and my family

ABSTRACT

Background: Oppositional and aggressive behaviour in children below twelve years of age is a frequent cause of concern for parents and teachers, and a common reason for referral to child and adolescent psychiatry. Whereas most children outgrow these behaviours, a small subgroup is at risk for developing a persistent antisocial lifestyle. Successfully identifying children at risk could prevent potential human and economic suffering of the child, his/her family, potential victim(s) and society. However, predicting which children are at higher risk for future antisocial behaviours is intricate and associated with the perils of mislabelling. Recently, promising approaches for early identification of boys at risk for future antisocial behaviour have been formulated. These include assessments of risk factors (risk assessments) and evaluation of certain personality traits – callous-unemotional (CU) traits. CU-traits are defined as patterns of emotional dysregulation, such as a pronounced lack of empathy, remorselessness and shallow affects. The main aim of this thesis was to investigate whether these structured approaches might improve early identification of clinic-referred boys at risk for future antisocial behaviour and to explore clinical child psychiatric work with these children and their families.

Method: A combination of quantitative and qualitative methodologies was used. A prospective longitudinal multicentre project was initiated in mid-Sweden during 2001. Parents of clinic-referred boys ($n = 76$) completed questionnaires and participated in a semi-structured researcher-led interview at baseline, yielding information to evaluate the risk for future antisocial behaviour. Parents were then interviewed again after six and thirty months. At the thirty-month follow-up we also included teachers as informants. Child clinicians at each clinic were asked to fill in separate evaluations of the boys' risk. Furthermore, a qualitative study was conducted in which narrative interviews with 16 clinicians from seven child psychiatric teams enabled exploration of clinical work with conduct-disordered boys.

Results: Assessments of risk for future antisocial behaviour, based on the risk assessment tool "Early Assessment Risk List for Boys" (EARL-20B), demonstrated acceptable interrater reliability (Paper I). EARL-20B-based assessments were associated with concurrent and prospective estimates of antisocial behaviour (Paper I-II). Combinations of EARL-20B risk factors were tentatively identified through cluster analysis, distinguishing between boys with high and low levels of antisocial behaviour (Paper I). Comparing the EARL-20B-based baseline evaluations with unstructured clinical baseline evaluations of risk and baseline DSM-IV Conduct Disorder (CD) indicated incremental predictive validity of the EARL-20B. The AUC estimate of CD-diagnosis at the thirty-month follow-up was of good accuracy (.87) for the EARL-20B. Further, conduct problem boys ($n = 41$) high on CU-traits had significantly more pervasive, varied and aggressive disruptive behavioural problems than boys low on these traits. This finding was not explained by the presence of DSM-IV AD/HD and Oppositional Defiant Disorder (ODD)/CD symptoms. Boys with CU-traits experienced poorer household circumstances, lived in families under high stress and received less help in school from special teachers than boys low in CU-traits (Paper III). The qualitative study suggested that child psychiatry clinicians consider a multitude of case characteristics when working with antisocial boys (Paper IV). The behaviour of the boys sometimes evoked feelings of fear among caregivers, signalling the need for instant interventions. The teams described a lack of consent and collaboration with other agencies, with unclear responsibilities across organisations.

Conclusions: The results suggest that structured assessments of risk and the evaluation of CU-traits can be valuable for identifying severe antisocial behaviour in boys. Early identification procedures touch upon the delicate balance between discerning children at risk to prevent them from repeated violent and norm-breaking behaviours, and the dangers of labelling. When addressing either risk for violence or CU-traits in boys, the purpose, due to ethical considerations, should therefore be to prevent serious antisocial behaviours from occurring through the provision of treatment and other interventions. Over the years, researchers and clinicians have pointed to a need for improved management of antisocial behaviour in child psychiatric services. Improved collaboration and clearer responsibilities among agencies still seem necessary to enable good care and management.

LIST OF PUBLICATIONS

This thesis is based on the following papers, which will be referred to by their Roman numerals:

Paper I. Enebrink, P., Långström, N., Hultén, A., & Gumpert, C. H. (in press). Swedish validation of the Early Assessment Risk List for boys (EARL-20B), a decision-aid for use with children presenting with conduct-disordered behaviour. *Nordic Journal of Psychiatry*.

Paper II. Enebrink, P., Långström, N., & Gumpert, C. H. (2004). *Predicting aggressive and disruptive behaviour in referred 6-12 year-old boys: Prospective validation of the EARL-20B risk/needs checklist.* Manuscript submitted for publication.

Paper III. Enebrink, P., Andershed, H., & Långström, N. (in press). Callous-unemotional traits are associated with clinical severity in referred boys with conduct problems. *Nordic Journal of Psychiatry.*

Paper IV. Enebrink, P., Cederborg, A.-C., Ryd Carlqvist, M., & Gumpert, C. H. (2004). *Clinical work with antisocial behaviour in boys: Narrative interviews with clinical teams in Swedish child and adolescent psychiatry.* Manuscript submitted for publication.

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ABBREVIATIONS

AD/HD	Attention Deficit Hyperactivity Disorder
APSD	Antisocial Process Screening Device
AUC	Area under the curve
CD	Conduct disorder
CI	Confidence Interval
CU	Callous-unemotional
DSM	Diagnostic and Statistical Manual of Mental Disorders
EARL-20B	Early Assessment Risk List for Boys
ICC	Intraclass correlation
I/CP	Impulsivity and conduct problems
NPV	Negative predictive value
ODD	Oppositional Defiant Disorder
OR	Odds ratio
PPV	Positive predictive value
ROC	Receiver operating characteristic

INTRODUCTION

Antisocial behaviour, characterized by aggressive, norm- or law-breaking behaviour, is of major concern to society due to the considerable human suffering and monetary costs involved for the persons, their family, victims and general public. Official statistics and self-reports show high rates of violent offending behaviours among adolescents and young adults (National Council for Crime Prevention, 2004; Snyder, 2001b; Snyder, & Sickmund, 1995) and, over the past decade, elevated levels of behaviour problems in young children (Loeber & Farrington, 2001). To capably intervene, efforts to understand the origins and development of these problems would therefore seem of utmost importance.

One main finding in criminology studies is that past behaviour is one of the best predictors of future behaviour. Accordingly, persistent disruptive behaviour in childhood has repeatedly been found to be a warning sign for continued conduct problems and delinquency in adolescence and adulthood (Loeber, Burke, Lahey, Winters, & Zera, 2000; Moffitt, 1993), antisocial personality disorder in adulthood (Farrington, 2000; Moffitt, Caspi, Harrington, & Milne, 2002; Tremblay, Pihl, Vitaro, & Dobkin, 1994), as well as for problems with interpersonal functioning and poorer mental health in general (Caspi, Moffitt, Newman, & Silva, 1996; Loeber et al., 2000; Moffitt et al., 2002). Despite a certain degree of stability, only a portion of children and adolescents with signs of disruptive behaviour will continue into long-term careers of offending and conflicts with the law. In clinical work it can be difficult to predict which children with early signs of antisocial behaviour will continue with or desist from troublesome behaviour. Over the years there has been an increased need to more accurately identify children with higher risk for (i.e. higher likelihood of) developing future antisocial behaviour (e.g. Loeber & Farrington, 2001). This could aid in directing scarce clinical resources to these children and their families at an earlier age before the problems have endured for years. Young children (under 10 years of age) seem to have a higher likelihood for successful treatment outcome (parent management training, child anger coping) than older children (American Academy of Child and Adolescent Psychiatry, 1997; Kazdin, 1997; Rutter, Giller, & Hagell, 1998). The earlier children come to treatment, the better their chances for improved behaviour could be.

Several organizations might be vital for early identification and preventive interventions, such as prenatal care, child-welfare clinics, child and adolescent psychiatric services, schools and social services. For instance, one third to one half of the children referred to child and adolescent psychiatry have symptoms of various disruptive behaviours (Garland, Hough, McCabe, Yeh, Wood, & Aarons, 2001; Kopp & Gillberg, 2003). Approximately three out of four of these children are boys. Child and adolescent psychiatric clinics constitute a potential setting for identification and treatment of early onset problems because of the large number of children with troublesome behaviours being referred to these clinics. Unfortunately, repeated evaluations of child psychiatric care have shown that young offenders and aggressive, antisocial boys receive unsatisfactory support (Loeber & Farrington, 2000; 2001; Ministry of Health and Social Affairs, 1998). Because of the risk for a poor prognosis and partial resistance to change at older ages using current intervention methods, there is a need for accurate identification and timely evidence-based interventions to break the vicious circles of

severe antisocial behaviour. This thesis primarily targets approaches in clinical work for improved early identification of young boys at risk for continued antisocial behaviour.

Definitions and clinical nomenclature

Early identification implies the discerning of children at risk for severe troublesome behaviour before the behaviour has become pervasive (cf. Loeber & Farrington, 2001). The term *risk* is of importance in the above statement. Kraemer and colleagues (1997) defined risk as the probability or likelihood of an outcome in a population of subjects. The risk for an outcome is usually influenced by a number of aspects, such as the number of unfortunate factors and their intensity or duration. Accordingly, early identification entails differentiating at an early stage those at high risk for continued antisocial behaviour from those at low risk. Due to the focus of early identification and the predominance of males as offenders (Snyder, 2001b), this thesis will concentrate on boys younger than 13 years of age (between 6 and 12 years). In this age group, few boys have severe conflicts with the law but many show a wide array of symptoms with the potential for distressing antisocial behaviour. When children or boys are referred to in the dissertation, an age below 13 years is implied, whereas mentioning of youth includes teenagers between 13 and 18 years of age. Prediction and prognosis are two other important concepts relevant to the discussion of risk for a future outcome. Whereas prediction of risk could be defined as predicting a specified behaviour on the level of the group, making a prognosis is an elaborate attempt to estimate risk in an individual case (Lagerberg & Sundelin, 2000). In clinical work, clinicians frequently meet requests from parents to make prognoses of children's behaviour and estimate the likelihood of successful treatment.

Aggressive, norm- and law-breaking behaviours are defined differently depending on research tradition (such as criminology, medicine, psychology or clinical perspectives), historical period and context, and age of the sample. Dodge and Pettit (2003) suggested that "Studying chronic conduct problems is a bit like studying heart disease. Both are vaguely defined constructs with questionable validity, but both also have clearly identifiable referents, such as myocardial infarctions or an act of homicide" (p. 350). The vast amount of research across several disciplines with varied perspectives most certainly points to the fact that this subject is of considerable concern. However, these circumstances have likely produced different understandings of antisocial behaviour.

In this thesis, "antisocial behaviour" will be used as an umbrella term. Both separate behaviours and clinical disorders such as conduct disorder (CD) and oppositional defiant disorder (ODD) (see definitions below) will be addressed. This is to acknowledge the diversity of the behaviours of interest and encompass a clinical perspective. Because of the young age of the sample in this thesis, antisocial behaviours will be investigated in behavioural-based terms (frequency, intensity, syndromes of e.g. aggressive behaviour), instead of in legal terms (number of arrests or adjudication) (for comparison, see Tremblay, 2003). Thus, official records are not of foremost interest but rather information collected from ratings or clinical evaluations of child behaviour.

Examples of critical *separate* antisocial behaviours are serious delinquent behaviour, such as assault or fire setting, leading to criminal charges if the person were 15 years or older (age of

criminal responsibility according to the Swedish legislation). Examples of behaviours not necessarily resulting in conflicts with the law are cruelty to animals, bullying, vandalism, aggression, fighting, or destructiveness (compare Augimeri, Koegl, Webster, & Levene, 2001; Lober & Farrington, 2001). Less severe troublesome behaviour is suggested to be a stepping-stone to later serious, violent and chronic offending (Loeber & Farrington, 2001). Without understanding these behaviours, chronic antisocial behaviour will only be recognizable in older ages when much harm already has been imposed on other people. When found more appropriate, disruptive behaviour will be used as a term to indicate less serious, non-offending, antisocial behaviours. Conduct problem is used to denote antisocial behaviour particularly when discussing children with callous-unemotional (CU) traits, since this is a preferred term in these clinical research approaches (Frick, 1998).

Two main approaches for singling out *clinical syndromes* of separate antisocial behaviours (symptoms) in childhood associated with lower psychosocial functioning can be identified: *the empirical-quantitative approach* and *clinical-diagnostic approach*. The empirical-quantitative line (e.g. Achenbach, 1995) has used multivariate statistical procedures in analysing data from large clinical samples to identify which symptoms tend to co-occur and form various syndromes. The quantitative information is mostly derived from rating scales, such as the Child Behaviour Checklist (Achenbach, 1991). The scales in this questionnaire classify antisocial-like behaviour in terms of attention problems, delinquent behaviour, aggressive behaviour and overall externalizing behaviour. An advantage to this method of collecting information may be that quantitative measures such as the number and severity of problems can be obtained and compared to actual distributions of scores in different populations (clinical and population-based).

The clinical-diagnostic approach, in contrast, uses diagnostic criteria mainly based on consensus discussions among experts. This way of defining problematic behaviour is a categorical approach, where certain criteria are used for establishing a diagnosis (yes/no). An advantage with this is that clinically relevant syndromes can be identified through cut offs of symptoms, which might aid in documenting the need for treatment. The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, APA, 1994) and the International Classification of Disorders (ICD-10; World Health Organization, WHO, 1992) are the two main diagnostic systems used. The disorders described in the manuals concerning antisocial behaviour might involve offending, law-breaking behaviours, but also include less severe behaviours.

Both of these clinical approaches (empirical-quantitative and clinical-diagnostic) are used in the thesis to define and follow up on antisocial behaviour. The empirical-quantitative approach is used for evaluating levels of antisocial behaviour in describing certain aggressive or delinquent behaviours, although not in relation to established norms in the population. Since the DSM-system is the clinical-diagnostic approach most commonly employed in studies of child antisocial behaviour, it is used for the subtyping of children with clinically relevant signs of antisocial behaviour. Three childhood DSM-disorders are of special importance for the development and description of antisocial behaviour in clinical work: attention deficit hyperactivity disorder (AD/HD), oppositional defiant disorder (ODD) and conduct disorder (CD). In literature, these have been described both as factors increasing risk

for antisocial behaviour, and used as outcomes (CD) for capturing clinical aspects of antisocial behaviour. AD/HD is defined as "a persistent pattern of inattention and/or hyperactivity-impulsivity that is more frequent and severe than is typically observed in individuals at a comparable level of development" (APA, 1994). Since ODD and CD will be utilized frequently as risk factors or outcome in the thesis, their DSM-IV criteria are presented in detail below:

Table 1. DSM-IV diagnostic criteria for Conduct Disorder (CD).

A)	A repetitive and persistent pattern of behaviour in which the basic rights of others or major age-appropriate societal norms are violated, as manifested by the presence of three (or more) of the following criteria in the past 12 months, with at least one criterion present in the past 6 months.

Aggression to people and animals
(1)   Often bullies, threatens, or intimidates others
(2)   Often initiates physical fights
(3)   Has used a weapon that can cause serious physical harm to others (a bat, brick, knife, gun)
(4)   Has been physically cruel to people
(5)   Has been physically cruel to animals
(6)   Has stolen while confronting a victim (mugging, purse snatching, extortion, armed robbery)
(7)   Has forced someone into sexual activity
Destruction of property
(8)   Has deliberately engaged in fire setting with the intention of causing serious damage
(9)   Has deliberately destroyed others' property (other than by fire setting)
Deceitfulness or theft
(10)   Has broken into someone else's house, building, or car
(11)   Often lies to obtain goods or favours or to avoid obligations (i.e. "cons" others)
(12)   Has stolen items of nontrivial value without confronting a victim (shoplifting)
Serious violations of rules
(13)   Often stays out at night despite parental prohibitions, beginning before age 13.
(14)   Has run away from home overnight at least twice while living in parental or parental surrogate home (or once without returning for a lengthy period)
(15)   Is often truant from school, beginning before age 13.

B)	The disturbance in behaviour causes clinically significant impairment in social, academic, or occupational functioning.
C)	If the individual is age 18 or older, criteria are not met for Antisocial Personality Disorder.

The characterizing feature of CD is a repetitive and persistent pattern of behaviours where the basic rights of others or age-appropriate societal norms are violated. Age of onset specifies two types of CD: onset of at least one criterion prior to age 10 (childhood onset), and absence of any criteria prior to age 10 (adolescent onset). Also, subthreshold levels of CD, that is CD with fewer than three criteria fulfilled, seem associated with co-morbidity and poorer functioning (Lewinsohn, Shankman, Gau, & Klein, 2004).

Table 2. DSM-IV diagnostic criteria for Oppositional Defiant Disorder (ODD).

A)	A pattern of negativistic, hostile, and defiant behaviour lasting at least 6 months, during which four (or more) of the following are present.
(1)	Often loses temper
(2)	Often argues with adults
(3)	Often actively defies or refuses to comply with adults' requests or rules
(4)	Often deliberately annoys people
(5)	Often blames others for his or her mistakes or misbehaviour
(6)	Is often touchy or easily annoyed by others
(7)	Is often angry and resentful
(8)	Is often spiteful or vindictive

Note: consider a criterion met only if the behaviour occurs more frequently than is typically observed in individuals of comparable age and developmental level.

B)	The disturbance in behaviour causes clinically significant impairment in social, academic, or occupational functioning.
C)	The behaviours do not occur exclusively during the course of a psychotic or mood disorder.
D)	Criteria are not met for conduct disorder, and, if the individual is age 18 years or older, criteria are not met for Antisocial personality disorder.

The characterizing feature of ODD is a recurrent pattern of negativistic, defiant, disobedient, and hostile behaviour towards authorities, usually manifesting before 8 years of age. Together, ODD and CD constitute the disruptive disorders (DSM IV-TR; APA, 2000).

Although known as a problematic human behaviour, psychiatry has only recently included antisocial behaviour as a clinical disorder. The eighth version of the ICD (1965) was the first manual to contain categories of conduct problems, whereas it was mentioned in the second version of the DSM system (APA, 1968). A specification of antisocial behaviour into the two disorders CD and ODD was first introduced in DSM-III (APA, 1980). A few aspects are worth noting when comparing the current classification with earlier schemes of the DSM. The criteria for CD and ODD have changed somewhat over the years. An impairment criterion has supplemented the DSM-IV (see criteria B in Tables 1 and 2), resulting in more restricted diagnostic groups. On the contrary, classifying into subtypes of CD has been altered from five (DSM-III, APA, 1980; undersocialized/socialized aggressive, undersocialized/socialized nonaggressive, atypical) to three (DSM-III-R, APA, 1987; solitary aggressive, group, undifferentiated) and more recently to two subtypes (DSM-IV, APA, 1994; childhood or adolescent onset). This change in subclassification might cause less explicit descriptions of children with CD, as the possibility to specify subgroups is reduced.

High levels of comorbidity are found among the clinical syndromes. For instance, Angold and Costello (2001) reported on concurrent comorbidity for DSM-IV CD with DSM-IV ADHD in community studies of children below 17 years. Between 22% and 50% of children with CD were described as having ADHD, and between 7% and 13% of children with ADHD to have CD (Angold & Costello, 2001). These authors also found CD/ODD to be associated with ADHD 10.7 times the odds (95%CI = 7.7-14.8), 6.6 with depression (95% CI = 4.4-11.0), and 3.1 times the odds with anxiety (95%CI = 2.2-4.6).

Focus of the thesis

As will be emphasised throughout the thesis, antisocial behaviour in youth is of major individual, interpersonal and societal concern. Due to the potential future suffering of a child, it would seem of great importance to provide treatment to him/her and his/her family before serious consequences take place, or the behaviour has become pervasive enough for a diagnosis like CD to be established. Children with various levels of aggressive or antisocial behaviours constitute a substantial proportion of those being referred for assessment and interventions in child psychiatry and social services (Garland et al., 2001). Clinical agencies could therefore be valuable for early identification and providing of treatments. However, it is a dilemma that interventions cannot be offered to all children with some signs of antisocial behaviour. How can we, in a clinical context, accurately distinguish children with troublesome behaviour that are at higher risk for developing a pervasive antisocial lifestyle from those at lower risk?

The most widely used procedure today for making prognoses of antisocial behaviour in child services is the *unstructured clinical judgment approach*, i.e. evaluations unaided by validated tools. This approach has the advantage of being flexible. It allows for case-specific formulations based on client information the clinician considers important to obtain. However, it does not always describe how evaluations or decisions are conducted, making their examination difficult. Experimental and contextual studies of general clinical assessments of adults indicate that the validity and accuracy of unstructured evaluations conducted by clinicians are disappointing. Studies of clinician ability *in general* indicate that mental health professionals have a tendency to generate explanations based on their first impression, looking for data to confirm the initial ideas (confirmation bias), failing to account for probabilities and allowing cognitive sets of shortcuts in order to make tasks manageable (Garb, 1998). With reference to *violence and aggressive behaviour*, it was previously a general consensus that mental health workers were no better at predicting violent behaviour in adult psychiatric populations than chance (Monahan, 1984). No study has been performed in clinical work with violent and antisocial children. Considering the added challenge of different developmental phases, changes that occur in the family and new situations in childhood, there is reason to believe that prognoses of childhood behaviours would not necessarily be easier to accomplish.

For children, evidence-based instruments have been developed to aid in decision-making of various concerns, such as DSM-based evaluations in individual cases (e.g. Diagnostic Interview Schedule for Children [DISC], Shaffer et al., 1993). The term evidence-based refers to empirically based knowledge about assessment, case management, or to the effectiveness of clinical treatments of mental health problems (Hoagwood, Burns, Kiser, Ringeisen, & Schoenwald, 2001). Dimensional measures of aggressive and disruptive symptoms (e.g. the Child Behaviour Checklist [Achenbach, 1991] or the Strengths and Difficulties Questionnaire [Goodman, 2001]) have been used to assess problem severity in children. However, relatively little attention has been directed towards assessments and the accuracy of predictions of *risk for continued serious antisocial behaviour* in child clinical settings. In contemporary clinical work and in research, there is little consensus on how to differentiate among young children with antisocial problems. To a large extent, clinical psychologists and psychiatrists are left

with their own expertise and knowledge to accurately distinguish between conduct-disordered children with the greatest need for treatment and continued supervision.

Due to the lack of instruments for early identification of high-risk children, a key recommendation of the United States Office of Juvenile Justice and Delinquency Prevention (OJJDP) study group on serious and violent offenders was to foster development and validation of screening instruments to identify young children at risk of becoming serious and violent offenders (Loeber & Farrington, 1998).

"Screening procedures are needed to distinguish prospectively (rather than after the fact) between those youths whose early offending is temporary and those who either will persist in offending over time or will escalate to serious offending." (Loeber & Farrington, 2000, p. 743).

Figure 1 presents a picture of evidence-based elements suggested as useful for early identification and management (e.g. Loeber et al., 2000). This thesis intends to evaluate promising structured approaches for early identification of young boys at risk for continued antisocial behaviour, based on some of these elements. Before turning to approaches constructed for enabling early identification, some background information on early onset, prevalence and risk factors for antisocial behaviour will be presented.

Figure 1. Aspects that might be used for early identification of children at risk for continued antisocial behaviour.
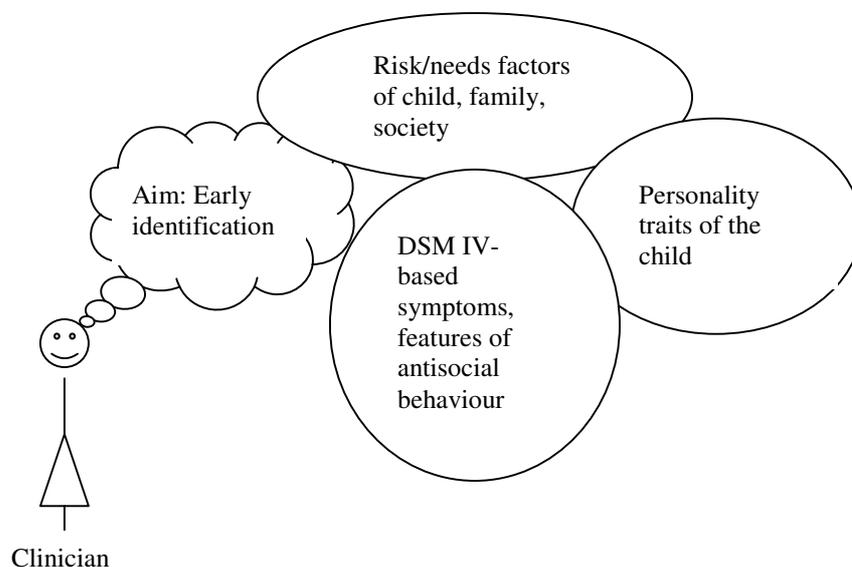
The significance of an early age for future antisocial behaviour
Children with an early start (before age 10) and consistent pattern of disruptive behaviours during childhood seem to have a higher propensity for continued antisocial behaviour during adolescence and adulthood. This differs from those with an adolescent onset of antisocial behaviour with no earlier history of conduct problems, who instead seem to have less likelihood for persistent antisocial behaviour (for a review, see Loeber & Farrington, 2000, 2001). The importance of an early start of antisocial behaviour among boys was demonstrated in the Cambridge Study in Delinquent Development, where 411 South London boys (mostly

born in 1953) were followed from the age of 8 to age 32 (Farrington, 1995). Young boys with troublesome behaviour in primary school were about five times more likely than boys without troublesome behaviour to be convicted as juveniles. In their review of prospective follow-up studies in population-based samples with children under age 7, Bennett, Lipman, Racine and Offord (1998) concluded that children with high levels of CD symptoms were 2 to 4 times more likely to be re-diagnosed with CD (follow-up periods varied from 1 to 7 years) compared with children without CD symptoms.

Furthermore, previous research repeatedly suggests that about 5% to 7% of adult offenders start their troublesome behaviour in young childhood and consistently show a variety of severe offending and norm-breaking behaviours during adolescence and into adulthood (e.g. Moffitt, Caspi, Dickson, Silva, & Stanton, 1996; Stattin & Magnusson, 1991). These people, mostly male, account for approximately half of all offences (Farrington & West, 1993; Stattin & Magnusson, 1991; Kratzer & Hodgins, 1999). Based on these and other findings, an early onset of antisocial behaviour in childhood is considered one of the most important markers for a poor outcome with regard to antisocial behaviour, but also for mental health problems in general (Caspi et al., 1996; Loeber & Farrington, 1998, 2001).

Problems with early identification based on childhood-onset antisocial behaviour
As described, young children with disruptive behaviour are at risk for a poor outcome. Nevertheless, many children show substantial variability in symptoms over time or desist completely from such externalizing problem behaviours (Lahey et al., 1995; Lipman, Bennett, Racine, Muzumdar, & Offord, 1998; Loeber, 1991; Loeber et al., 2000). Focusing on clinical disorders in the Ontario Child Health Study (OHCS), which started in 1983 by collecting information on a province-wide community sample in Canada of more than 3,000 children below 12 years of age, Offord and colleagues (1992) reported that 44% of children diagnosed with CD showed persistent signs of CD at the 4-year follow-up. On the contrary, Lahey et al., (1995) in the prospective longitudinal Developmental Trends Study (DTS) of 177 boys aged 7-12 referred to outpatient clinics in Pennsylvania and Georgia during 1987, reported that 88% of boys identified to have CD met criteria at least once again over a period of 3 years with several assessments. Allowing a wider time-window of assessment points towards higher incidences of CD at some point during this time. CD could therefore be associated with either a very high stability over time (Lahey et al, 1995), or with a moderate stability (Offord et al, 1992), depending on how the outcome-period is defined. Identifying children at risk for continued antisocial behaviour based only on young age and diagnostic criteria could be linked to a risk for misclassification. Moreover, these estimates might rely on evaluations of absence or presence of symptoms before a certain age, which could be affected by problems with recall by parents. As shown in the differences in outcome, children with an early onset of antisocial behaviour, or diagnosed with CD, constitute a heterogeneous group. Frick (1998) started using the plural term "conduct disorders" to acknowledge the heterogeneity and various developmental trends of children with an early start. Altogether, it is important not to oversimplify an early age of onset.

Prevalence and epidemiology
Estimates of the frequency at which behavioural problems and disruptive disorders occur in childhood depend on several aspects, such as severity of the behaviours studied, whether

individual behaviours or patterns (disorders) of behaviours are evaluated, sex, as well as age group. Higher reports are obtained of less disruptive behaviour than of severe antisocial behaviour. Offord, Lipman and Duku (2001) reported on prevalence rates for antisocial behaviour, using parent-reported data from the National Longitudinal Study of Children and Youth (NLSCY), which includes a random sample of children living in Canada who were 11 years or younger during the first round of data-collection in 1994/1995 (N = 22813). They also used teacher-reported data from the Ontario Child Health Study (OCHS). The reported six-month prevalence rates of physical aggression in boys aged 4 to 7 years was 38.2% when parents were asked whether their child "gets into many fights", and 21.9%, evaluating if the child "physically attacks people". Comparable rates were obtained in ages 8 to11 years. Teacher reports on physical aggression were generally slightly lower. Parent-reported indirect aggression and property offences for boys aged 4 to 7 as compared to boys aged 8 to 11 indicated somewhat increased levels over time (e.g. "when mad at someone, becomes friends with another as revenge", 13.1% vs. 17.7%; "steals at home"; 4.9% vs. 5.7%).

In their review of seven longitudinal studies focusing on self-reported offending behaviours in children, Espiritu, Huizinga, Crawford and Loeber (2001) found that the majority of the participating boys had been involved in aggression before age 13. Involvement in some aggressive behaviour was described as normative during childhood. Between 14% (Pittsburgh-sample) and 40% (Denver-sample) had been involved in assaults where the victim was seriously hurt. As age increased, more children reported that their police contacts were in relation to their delinquent behaviour (2% at ages 7 to 8; 5% at ages 9 to 10; and 7% to 10% at ages 11 to 12).

The DSM-IV TR (2000) reports CD prevalence rates for children and youth to be between 1% and 10% in community samples, and ODD prevalence rates between 2% and 16%. Reviews have concluded that existing evidence on age trends and gender ratios is inconsistent for CD and ODD (Angold & Costello, 2001; Loeber et al., 2000). Nevertheless, on a general level, increased prevalence of CD by age, and a stronger male to female CD ratio, specifically in childhood and early adolescence, has been shown repeatedly (Maughan, Rowe, Messer, Goodman, & Meltzer, 2004).

Risk factors and correlates
Throughout the 1990s, results from well-designed prospective longitudinal birth-cohort, clinical and cross-sectional studies in various cultural settings advanced our understanding of the development of antisocial behaviour. These studies include the Cambridge Study in Delinquent Development – United Kingdom (see Farrington, 1995); Pittsburgh Youth Study – United States (see Loeber, Farrington, Stouthamer-Loeber, Moffitt, Caspi, & Lynam, 2001); Montreal Longitudinal Study of Disruptive Boys – Canada (see Tremblay et al., 1994); Christchurch Health and Development Study – New Zealand (see Fergusson, Horwood & Lynskey, 1994); Dunedin Study – Australia (see Moffitt et al., 2002); Longitudinal study in mid-Sweden (see Stattin & Magnusson, 1995); and Jyväskylä Longitudinal Study on Social Development – Finland (Hämäläinen & Pulkkinen, 1996).

A bulk of research shows that causes of, and continuation of, antisocial behaviour probably is multiply determined, with interactions between individual, family, peer, school and

community risk and protective factors (see Figure 2) (Atzaba-Povia, Pike, & Deater-Deckard, 2004; Arseneault et al., 2003; Burke, Loeber, & Birmaher, 2002; Deater-Deckard, Dodge, Bates, & Pettit, 1998; Caspi et al., 2002; Fergusson, Swain-Campbell, & Horwood, 2004; Hill, 2002; Loeber & Farrington, 1998, 2000, 2001).

Figure 2. Childhood risk factors for violent and/or delinquent antisocial behaviour.

Child factors		
Difficult temperament	Impulsive behaviour	Hyperactivity
Aggression	Substance use	Early onset
Withdrawn behaviour	Low intelligence	Male gender
Favourable attitudes toward offending		

Family factors		
Antisocially behaving parents	Abusive parents	Low socioeconomic status
Poor parenting strategies	Maternal depression	Family/marital conflict
Poor parent-child relations	High turn-over of caretakers	Large family

Social factors		
Low academic performance	Old for grade	Low school motivation
Schools with poor organization and functioning	Weak bonds to school	Low educational aspirations

Peer factors		
Involvement with deviant, antisocial peers	Peer rejection	Gang membership

Neighbourhood factors		
Neighbourhood disadvantage	Neighbourhood disorganization	Availability of weapons
Portrayal of violence in media		

Note: Based on Loeber and Farrington (2000, 2001) and Lipsey and Derzon (1998).

Among the strongest risk factors for continued youth offending, evident in ages 6 and 11, are delinquent acts, male gender, aggression, substance use, low family socioeconomic status, and antisocial parents (Lipsey & Derzon, 1998). One of the best social behaviour risk factors before age 13 is suggested to be aggression (Tremblay & LeMarquand, 2001). Two forms of aggressive behaviour, proactive (instrumental, for personal gain) and reactive (hostile, retaliatory) aggression have recently been suggested as important factors in differential development of antisocial behaviour. Vitaro, Gendreau, Tremblay and Oligny (1998) reported that proactive aggression, but not reactive aggression, predicted later delinquency in aggressive children. Generally, a higher number of risk factors increases the likelihood that a child with conduct-problems will be vulnerable for continued antisocial behaviour into adolescence and adulthood (Burke et al., 2002; Farrington, 2000).

As seen, a significant number of research studies on antisocial behaviour have been conducted. Unfortunately, the term risk factor has earlier been inconsequently used in research. Kraemer and colleagues (1997) suggested that clearer definitions could be achieved by delineating a "risk factor" as a measurable characterization of an agent or exposure in a specified population preceding the outcome of interest. This can then be used to divide the population into two groups. Importantly, risk factors should not be confused with "correlates" that are measured concurrently with or after the outcome. Furthermore, we still know little about the interrelationship among the individual risk factors identified for antisocial behaviour

(Burke et al., 2002). In other words, how are the most significant risk factors interrelated, how do risk factors from multiple domains interact, exert a causal influence on outcome or how are they modified by protective factors? For treatment reasons it could be an advantage to know whether to expect a change in behaviour if a risk factor is affected. To communicate this, Kraemer et al. (1997) suggested that risk factors be described as those that cannot be changed (fixed markers, or "static" according to Hanson, 1998), those that can be modified but do not change the outcome (variable markers), and those that can be varied and also change the risk of the outcome (causal risk factors, or "dynamic" according to Hanson, 1998).

To better describe the development of antisocial behaviour, researchers have tried to identify developmental pathways or trajectories in childhood. Pathways are defined as descriptions of behavioural development of a group of individuals that is different from the behavioural development of other group(s) of individuals (Loeber & Coie, 2001). For instance, data from community samples and from the Developmental Trends Study, supports a model of three pathways, the overt (violent behaviour), covert (delinquent behaviours) and authority conflict (serious disobedience/avoidant behaviours) pathway (Loeber et al., 2000). Further, Tremblay and colleagues provide data on developmental trajectories for children with antisocial behaviour. In a longitudinal study kindergarten boys (*n* = 909) from low socioeconomic areas of Montreal were followed through age 17 (Lacourse et al., 2002). The researchers found support for six developmental trajectories with various risks for poor outcome. These trajectories varied from low antisocial behaviour, low rising, low decline, medium decline, high rising with respect to self-reported physical aggression, vandalism and theft.

Previous research has thus improved our understanding of the onset and development of serious antisocial behaviour. However, little information is provided on how to combine this knowledge into prognoses in individual cases. There is a gap between our understanding of childhood antisocial behaviour and the application of these findings to clinical practices (Loeber & Farrington, 2001).

Adult psychiatric assessments: improved predictions of antisocial behaviour
During the 1970s, Steadman and Cocozza (1974) and Thornberry and Jacoby (1979) followed up patients evaluated by professionals as "dangerous", but due to precedential judicial decisions by the Supreme Court in the USA were released from maximum-security hospitals to society or general psychiatry. In total, about 1,500 patients were released. Only about 20% of these committed new crimes. Based on these and other studies, Monahan (1981; as cited in Monahan, 1984) criticized the ability of clinicians to make reliable and valid predictions of adult violent behaviour. A few years later, in a review of this first generation of research on violence prediction, Monahan (1984) discussed methodological concerns in earlier studies, thereby setting the scene for a new era of research. This is sometimes called the second generation of risk assessment research. First, the dichotomous evaluation of "dangerousness" was replaced with discussions about continuous "risk" estimates. Second, of importance was the finding that a joint use of several risk factors or the use of some critical risk factor generally seems to increase the accuracy of predictions (e.g. Kraemer et al., 1997). This knowledge was used to construct *risk assessment tools,* where risk for antisocial behaviour is evaluated based on the number of risk factors. One approach of risk assessment tools, the *actuarial*, focuses on operationalisations of empirically derived risk factors that are coded and

combined according to a weighting system (e.g. The Violence Risk Appraisal Guide [VRAG]; Quinsey, Harris, Rice, & Cormier, 1998). Fixed rules provide a base for conclusions concerning risk. Even though this approach has been shown to outperform unstructured clinical evaluations (for a discussion, see Sjöstedt, 2002), many evaluated risk factors are historical risk factors, thus leaving little information to management procedures.

Another line of research, the third generation, directed development of risk assessment tools that combine formats for both empirically derived risk factors and clinical evaluations. This structured decision-making is called *structured clinical assessment* or *structured professional judgment* (e.g. The Historical and Clinical Risk management checklist [HCR-20]; Webster, Douglas, Eaves, & Hart, 1997). Anchored in the total number of risk factors present, the clinician also takes into account specific combinations of risk factors and his/her clinical considerations. This approach moves emphasis from *prediction of risk* to *management* (Doyle & Dolan, 2002). Both actuarial and structured clinical assessment tools are employed in adult forensic and psychiatric settings, for instance to guide decisions on whether to allow less secure imprisonments, unsupervised leaves or parole. A recent trend has been to introduce risk assessment tools (e.g. Structured Assessment of Violence Risk in Youth [SAVRY]; Borum, Bartel, & Forth, 2002) into adolescent forensic psychiatry settings to evaluate risk and plan interventions.

Child risk assessment: a new approach for early identification of antisocial behaviour

Until now, only a few clinical assessment instruments to identify concern for future antisocial behaviour in children, based on risk factors, have been developed (see Table 3; compare Corrado, Roesch, Hart, & Gierowski, 2002; Howell, 2001).

Table 3. Screening tools for children at risk for future antisocial behaviour.

Assessment tool	Target group	Author (published)	Country, state
Cracow instrument (risk/needs management)	Violent children and adolescents	Corrado/ Simon Fraser University team (unpublished)	Canada, Curnaby/ Poland, Cracow
Delinquents under 10 program Risk List	Antisocial children under 10 years	Hennepin County Attorney's Office (1998)	USA, Minnesota
8% Early Intervention Program Risk assessment instrument	High-rate offenders among court-referrals aged 15 years or younger	Schumacher, & Kurz (1999)	USA, California
EARL-20B (Early Assessment or Risk List for Boys, Version 2)	Antisocially behaving boys under 12 years	Augimeri, Webster, Koegl, & Levene (2001)	Canada, Ontario
Risk Factor Profile	Child offenders under 10 years	Beuhring (2002)	USA, Minnesota

One of the first instruments focusing on children, composed as a *structured assessment tool*, and described as "one of the most promising" by Loeber and Farrington (2000) is the Early

Assessment Risk List for Boys, (EARL-20B; Version 2; Augimeri et al., 2001). The tool was constructed to make scientific information of risk factors related to antisocial behaviour available and practically useful to clinicians. This was based on the assumption that decision-making (i.e. identification of persons with medium/high risk and individualisation of treatment) for these problems should be based on relevant evaluations of risk and needs factors (Andrews & Bonta, 1998). Researchers and clinicians at the Earlscourt Child and Family Center in Toronto, currently known as the Child Development Institute, constructed the EARL-20B. The intended purpose of the EARL-20B is described to be threefold:

"(1) to provide a platform for increasing clinicians' and researchers' general understanding of early childhood risk factors for violence and antisocial behaviour, (2) to help construct violence or antisocial behaviour risk assessment schemas for particular children according to an acceptable structured format, and (3) to assist in the creation of effective clinical risk management plans for high-risk children and their families." (Augimeri, Koegl, Levene, & Webster, in press).

The EARL-20B includes 20 risk factors, both historical and dynamic, for continued antisocial behaviour and is constructed to support the clinician in evaluating risk but not in providing a risk estimate through fixed rules as in the actuarial approach. The developers report on a retrospective follow-up study of the criminal conviction status of 378 boys. The results indicated that those with high filed-based EARL-20B total scores were significantly more often convicted than those with low EARL-20B total scores (Augimeri et al., 2001). Additionally, Augimeri et al. (in press) reported that high-risk boys appeared in court 1.6 times more often for sentencing, and were found guilty, on average, of three more charges than low-risk boys.

Alternative approaches to risk assessment: The role of early onset, hyperactivity, conduct disorder and personality traits in subtyping antisocial behaviours

As earlier described, there is little consensus on how to identify meaningful subgroups among young children with antisocial problems (i.e. those with high or low risk). The risk assessment approach is one recent method. It is based on empirical evidence that prediction of disruptive behaviour can be improved by knowledge of certain behavioural precursors such as an early age of onset of high frequent disruptive behaviour in multiple settings, and that predictors are found in the individual, family, peer group, school, and neighbourhood (Loeber & Coie, 2001). Nevertheless, this screening procedure identifies several risk factors without pointing to one as being of specific interest, and may lack in providing information about causal processes. So far, the risk assessment approach also provides little information on how to relate risk factors to treatment. Alternative approaches for identifying a more severely disordered group of children at risk for future antisocial behaviour have been suggested. These include developing a taxonomy for early onset of disruptive behaviour as compared to adolescent (see below), investigation of patterns of behaviours, personality traits, based on DSM-IV AD/HD or CD, or capturing specific personality traits associated with severe antisocial behaviour in adulthood.

Personality traits refer to individual differences in durable conceptualizations of the tendency to behave, think and feel (APA, 2000; Tellegen, 1991). This does not imply that the traits are static and cannot be affected. Instead, personality traits currently are mostly considered to

influence how people organize their behaviour to meet challenges and demands from development and the environment (Funder, 1991). Traits have been thought to be relevant to a large number of behaviour domains, of which criminal behaviour is one (Larsen & Buss, 2005; Krueger et al., 1994). A problem in the study of individual characteristics has been to develop a complete classification of personality traits. The taxonomy that has received the most attention among personality researchers in past decades is a model called the "Big Five" or "Five-Factor Model" (Costa & McCrae, 1995). Five broad higher-order traits have been identified and named as I) Surgency/Extraversion; II) Agreeableness; III) Conscientiousness; IV) Neuroticism/Emotional instability; V) Openness to experience/Intellect. These dimensions are suggested summaries of more primary traits. For example, Neuroticism could be thought of as a tendency towards anger, guilt, and anxiety. The model has been replicated in different samples, but also criticized by some for not being comprehensive (Larsen & Buss, 2005). Recently, some researchers have begun investigating personality traits and dimensions in children. John et al. (1994) arrived at this from employing the "Big Five" dimensions, whereas other researchers have utilized current (e.g. Lynam, 1996) or earlier diagnostic nosologies (e.g. Frick and Hare, 2001) specifically related to adult antisocial behaviour.

Early onset: a developmental taxonomy (i.e. nomenclature)
Moffitt (1993) proposed a "developmental taxonomy", classifying children with a childhood-onset of severe antisocial behaviour as "life-course persistent", as opposed to children with "adolescence-limited" antisocial behaviour. In this way, Moffitt wanted to describe the pathway of those who start their disruptive behaviour at an early age and continue with their antisocial behaviour for many years, whereas the majority of adolescents engage in antisocial behaviour during part of their teenage years, with a peak at about 14 to 17 years, but later discontinue this behaviour. Moffitt (1993) provided a theory for how these behaviours develop and are sustained. Based on findings from the Dunedin Longitudinal Study in New Zealand of children followed from age 3 into adulthood (*n* = 1037), Moffitt and colleagues tested and refined this taxonomy. Children with an early onset of antisocial behaviour tend to show problems that worsen during development, seem characterized by more aggression, cognitive and neuropsychological disturbances, greater impulsivity, and more dysfunctional family backgrounds (Moffitt et al., 1996; Moffitt & Caspi, 2001). The life-course persistent behaviour is believed to develop through interpersonal interactions when a temperamentally difficult infant is raised in a home without an optimal rearing environment. On the contrary, youth with the adolescent-onset pattern are likely to have a more rebellious personality, partly mimicking behaviours from the childhood-onset group.

Moffitt's (1993) theory may provide an explanation for why antisocial behaviour persists. However, many aspects of the theory remain to be tested. Also, to be included in the life-course persistent group found in the studies by Moffitt and colleagues (2001, 2002), antisocial behaviour was elevated on at least three out of four assessments between the ages 5 to 11, and present both at home and in school. Hence, the taxonomy required more than one assessment to identify early onset children and stability over time, and is thereby assumed in the model. In clinical practice, this designates a problem. The behaviour needs to be confined *before* it has progressed, not in retrospect. Identifying persistently antisocial individuals at an early age is still difficult when basing evaluations on Moffitt's developmental taxonomy. High-risk

children would not be identified until they have committed violent acts or caused much concern.

Employing the current diagnostic nosology: CD and co-morbid AD/HD
Another popular approach for capturing conduct-problem children, based on the current DSM-nosology, is to focus on AD/HD. A wealth of studies have shown that children with ADHD have an elevated risk for future antisocial behaviour as compared to groups without behaviour disorders (af Klinteberg, Andersson, Magnusson, & Stattin, 1993; Satterfield, Hoppe, & Schell, 1982). However, Lilienfeld and Waldman (1990) pointed out that the majority of studies linking AD/HD to adult criminality have failed to consider the possible co-morbidity of conduct disorder. When cohorts with both AD/HD and CD are evaluated, the results are mixed. Some longitudinal studies demonstrate a risk for poorer outcomes among children with hyperactivity partly mediated through the presence of conduct problems (Barkley, Fischer, Edelbrock, & Smallish, 1990; Fischer, Barkley, Fletcher, & Smallish, 1993). Other studies find the presence of hyperactivity to be sufficient for a higher prevalence of antisocial personality disorder (Mannuzza, Klein, Bessler, Malloy, & LaPadula, 1998) or outcome in respect to overall social adjustment (Danckaerts, Heptinstall, Chadwick, & Taylor, 2001). Even though not necessarily related to more severe antisocial behaviour in adulthood, when AD/HD is present children seem to develop their conduct problems earlier, are affected by neuropsychological deficits (e.g. in executive functioning, inhibiting a dominant response, lower autonomic reactivity), and seem more likely to try illegal drugs at an early age than CD-only children and youths without AD/HD comorbidity (Thompson, Riggs, Mikulich, & Crowley, 1996; Waschbusch, 2002).

Based on these findings, Lynam (1996, 1998) suggested that children with co-morbid CD and AD/HD could have different causal processes behind their conduct problems than children diagnosed with only CD. He also pointed to similarities in characteristics of this childhood group to features described in research of adult offenders with psychopathic personality traits. Lynam suggested that children with co-morbid CD and AD/HD might be "fledging psychopaths". Psychopathy, first defined by Cleckley (1976), and in contemporary empirically based conceptualisations by Hare (1991), is defined as a stable personality constellation of interpersonal (between people) traits (glibness, grandiosity, lying, and manipulation), affective traits (lack of empathy, remorselessness, and shallow affect), and behavioural characteristics (impulsivity, need for stimulation, and irresponsibility).

Cross-sectional studies reveal that adult antisocial individuals with psychopathic traits exhibit higher rates of instrumental violence and longitudinal studies imply that people high on psychopathic traits are more prone towards (especially violent) criminal recidivism when released from prison or psychiatric care (for reviews, see Hare, 1999; Walters, 2003). In addition to its predictive utility, psychopathy also appears to be important for causal theories of antisocial and criminal behaviour. Specifically, adult antisocial individuals with psychopathic traits are more likely to show deficits in the way they experience emotion and are less likely to have lower intelligence (Hare, Hart & Harpur, 1991). Several studies indicate that adult offenders with psychopathic traits might be more treatment resistant than offenders without psychopathy (Ogloff, Wong, & Greenwood, 1990), although recent research is more

optimistic (Skeem, Monahan, & Mulvey, 2002). Overall, results suggest that causal factors of antisocial behaviour of people with and without psychopathic traits may differ.

However, finding "fledging psychopaths" (Lynam, 1996) among children diagnosed with CD and AD/HD might result in overinclusiveness since several combinations of symptoms can be composed of these diagnoses. For instance, three criteria are required for a CD diagnosis, which can be drawn from any of four subcategories of CD: 1) aggression towards people and animals, 2) destruction of property, 3) deceitfulness or theft, and 4) serious violations of rules. This leaves a possibility of several individual profiles among those diagnosed with CD and AD/HD. Lynam (1997) developed an instrument, Childhood Psychopathy Scale (CPS), to operationalise the hallmark clinical features of psychopathy. In the middle sample of the Pittsburgh Youth Study (n = 430), he showed that high-scoring boys on the CPS were reported by parents to be aggressive and temporally stable antisocial adolescents at ages 12 to13. The results indicated an incremental validity over other known predictors in predicting serious stable antisocial behaviour in adolescence. However, the study was done in retrospect and CPS ratings were obtained at the follow-up, thus leaving little information on predictive validity.

Callous-unemotional traits
Frick and colleagues (e.g. Frick & Ellis, 1999) developed another model to identify children at high risk, based on the affective aspects of psychopathy. This line of research describes patterns of emotional dysregulation, named callous-unemotional (CU) traits, including a pronounced lack of empathy, remorselessness, and shallow affects (Frick & Ellis, 1999). These affective characteristics were considered primary in earlier clinical descriptions of psychopathy (Cleckley, 1976). Frick and colleagues (1994) extended the concept of psychopathy to children using the adult version of the Psychopathy Checklist (PCL-R; Hare, 1991). Each of the 20 items of the PCL-R was made into an analogous item in a tool more applicable to children. This instrument was named the Psychopathy Screening Device, recently renamed to the Antisocial Processing Screening Device (APSD; Frick, & Hare, 2001).

Factor analyses in clinical samples of referred children aged 6 to 13 years (n = 95; and a subset of this sample, n = 64) revealed two dimensions, one associated with impulsivity and conduct problems (I/CP), the other with interpersonal and motivational aspects of psychopathy (CU-traits) (Frick, O'Brien, Wootton, & McBurnett, 1994). Some differences should be noted between the PCL-R and the APSD. Due to the more age appropriate design of the APSD, some of the PCL-R items are not represented (e.g. pathological lying, parasitic lifestyle, lack of realistic long-term goals). Further, some APSD items are not accounted for in the PCL-R (concerned about school-work, keeps the same friends, teases other people).

Findings from a sample of 120 clinic-referred children ages 6 to 13 years revealed that antisocial children, high on both parent- and teacher-reported conduct problems and CU-traits, displayed more severe and aggressive antisocial behaviour. They also had a greater history of police contacts and parental history of antisocial behaviour, than those low on these traits or with only conduct problems (Christian, Frick, Hill, Tyler, & Frazer, 1997). In cross-sectional studies, antisocial children with high levels of CU-traits referred to outpatient mental health

clinics tended to show more thrill- and adventure-seeking tendencies (Frick et al., 1994; Frick, Lilienfeld, Ellis, Loney, & Silverthorn, 1999) and less sensitivity to cues of punishment when a reward-oriented response set was primed (Fisher & Blair, 1998; O'Brian & Frick, 1996) and their conduct problems seemed less strongly associated with dysfunctional parenting practices (Wootton, Frick, Shelton, & Silverthorn, 1997) than for antisocial children without such traits. Adolescent referred samples with behaviour problems and CU-traits were less reactive to emotional and threatening stimuli (Blair, 1999; Blair, Colledge, Murray, & Mitchell, 2001; Loney, Frick, Clements, Ellis, & Kerlin, 2003), seemed less distressed by the negative effects of their behaviour on other people (children aged 6 to 13: Frick et al., 1999; incarcerated youth in their mid-teens: Pardini, Lochman, & Frick, 2003), more impaired in their empathic concern and moral reasoning towards others (Fisher & Blair, 1998; Pardini et al., 2003), and tended to expect more instrumental gain (e.g., obtaining social goals or goods) from their aggressive behaviours, as compared to conduct-problem youths without these traits (Pardini et al., 2003). These findings are in accord with research on adults with psychopathic traits, and suggest unique causal mechanisms underlying antisocial behaviour of youths with psychopathic-like traits.

Ethical and professional considerations of an early identification
Phrasings such as "high-risk" or "psychopathy-like traits" may be associated with a negative connotation of both labelling and biological references. That is, classifying children according to adult typologies could signal a poor outcome, leading to resignation. Concern should therefore be taken when communicating about these aspects and issues of early identification. A cautious approach when extending the methods and concepts to children is important, especially due to the newly constructed measures and lack of long-term follow-ups (for shorter follow-ups, 1 and 4 years respectively, on 98 children with CU-traits recruited from community-wide screenings, see Frick, Cornell, Barry, Bodin, & Dane, 2003; Frick, Kimonis, Dandreaux, & Farell, 2003).

Whereas both risk assessment and identification of psychopathic traits in adult settings might be linked to a desire for societal protection as well as to management, in child clinical work these approaches have primarily been suggested as tools to enable early identification and specialized preventive treatment. One reason for trying to identify children at an early age is that behaviours and traits may be less stable and more open to change, for instance through treatment, than in adulthood. Thus, the negative prognosis found for offending adolescents and adults need not be applicable to children. In agreement with the remark by Frick and colleagues (Frick, Barry, & Bodin, 2000), the alternative to identifying a small subgroup might be to consider all conduct-disordered children to be at high risk or to have youth signs of psychopathy.

Limitations of prior research
It has been suggested that decision-making concerning people with aggressive and antisocial behaviour should be based on evaluations of *risk/needs factors* to better distinguish individuals at varying levels of risk and guide treatment (Andrews & Bonta, 1998; Loeber & Farrington, 2000). The EARL-20B, developed to integrate empirically derived risk and needs factors, has been suggested to be one of the most promising screening tools for early identification (Loeber & Farrington, 2001). Until now, this risk and needs instrument has only

been validated retrospectively in Canada. No publications on concurrent or prospective predictive validity, or item-wise interrater reliability of the EARL-20B have been published. Neither has it been examined if evaluations of risk with the EARL-20B actually improve evaluations over those performed without any decision-aid when conducted in the same context. These aspects remain to be investigated, and the few, albeit promising, results obtained need replication in out of construct samples and other socioeconomic settings before the instrument can be suggested for use in clinical contexts such as Scandinavia.

In addition, recent research suggests that the focus for identifying children at higher risk should not only be on behavioural features but also on possible causal processes such as emotional and cognitive characteristics (Rutter, 2003). The line of research on CU-traits is considered as promising in the efforts to capture some of these aspects (see Loeber et al., 2000), focusing on the hallmarks of the adult psychopathic personality. This composes an alternative approach to risk assessment for early identification of children at risk. Still, the results contributing to this promising base of knowledge mainly come from one research group in the USA. Furthermore, some of the findings are on adolescents and not on children (except Christian et al., 1997; Frick, Cornell, et al., 2003; Frick, Kimonis, et al., 2003, yet partly on the same sample). Hence, before introducing these research findings for use in clinical practices it seems important to replicate the findings in independent studies and sociodemographic settings.

The use of structured risk assessments and identification of CU-traits in child psychiatry could contribute to improved targeting of children at higher risk for antisocial development. However, since most structured and evidence-based procedures have been constructed and evaluated in research situations, there might be aspects relevant from a clinical point of view that have not been recognized or considered (Elbogen, 2002). Accordingly, there is a risk that even well validated practices will lack ecological validity and clinical usefulness. Descriptive information on what might be considered difficulties in clinical work concerning these children is sparse. For instance, there might be aspects not covered in evidence-based practices that could complicate the management so that proper care still is hampered or not provided. Another problem concerns the fact that when evidence-based practices are employed in a clinical setting, there is no guarantee that the outcomes are similar to those obtained in research (Hoagwood et al., 2001). One suggested strategy for understanding aspects that might impede the usefulness of procedures or hamper the implementation of interventions is to collect information about the clinical context of interest (Elbogen, 2002; Sullivan, 1998). Clinical experiences and descriptions of work with antisocial behaviour in children have not yet been subject to detailed study.

AIMS AND RESEARCH QUESTIONS

The main aim of this thesis was to investigate different approaches for improved identification of clinic-referred young boys at risk for future antisocial behaviour. The first two studies examined whether a structured risk and needs assessment procedure, the EARL-20B, is of value for improved evaluations of risk for continued antisocial behaviour in boys referred to child psychiatry. The third study investigated whether specific individual characteristics, callous-unemotional traits, are related to severe and varied antisocial behaviour and are useful for early identification of continued antisocial behaviour. The fourth study examined how clinicians in child psychiatry describe their work with these children and their families.

The specific aims were to:

I)   Investigate the interrater reliability and concurrent validity of the EARL-20B in a clinic-referred sample of boys, and to explore potential subgroups of children with similar EARL-20B risk and needs factors. (Paper I)

II)   Study the predictive validity of the EARL-20B in two follow-up phases (six and approximately thirty months after the first assessment) of a clinic-referred sample, and to compare predictions based on the EARL-20B with baseline conduct disorder and clinician predictions of risk for future antisocial behaviour. (Paper II)

III)   Clarify whether a subgroup of young conduct-disordered boys, characterized by callous-unemotional (CU) traits, has higher levels of aggressive and antisocial behaviour, independent of the level of severity of the behaviour problems and ADHD-diagnosis. (Paper III)

IV)   Explore how clinicians in child psychiatry experience and conceptualise work with children presenting with antisocial behaviour and relate these understandings to prescriptive recommendations for clinical work with conduct-disordered children found in literature. (Paper IV)

METHOD

Setting

In Sweden, children with antisocial behaviour are often referred to community-based outpatient mental health services, general child and adolescent psychiatry. This service is free of charge for the family. A child and adolescent psychiatrist, psychologist and/or social worker plan and conduct assessments and treatments, alone or as a team. Frequently, contacts are made with other agencies or organizations like social welfare or school in order to coordinate the work with the child and family (Ministry of Health and Social Affairs, 1998). Most communities also have access to child psychiatric teams with special competence, for example in the field of neuropsychiatry, or clinics with 24-hour service and in-patient facilities.

Design and general considerations

Three of the papers in this thesis are based on quantitative study designs with data from child and adolescent psychiatry, and aim to evaluate approaches for early identification (Paper I-III). Quantitative approaches may, for instance, be valuable in that they provide informative descriptive information, allow for calculations of relationships between variables and for comparisons between groups (compare Hinkle, Wiersma, & Jurs, 2003; Silverman, 2000). To generate hypotheses, cross-sectional studies are important. However, to move beyond correlational findings, longitudinal studies are needed (Farrington, 1999; Loeber & Farrington, 2001). The use of a prospective longitudinal design permits the study of change over time. It also allows for examination of both cross-sectional investigations and predictions of antisocial behaviour as it can follow changes and with more confidence determine causal, moderating, or mediating associations between risk factors and outcome (Kraemer et al., 1997). A naturalistic longitudinal follow-up project was therefore initiated with a sample of clinically referred boys. This was conducted in collaboration with several child and adolescent clinics. A naturalistic design was necessary, in the sense that the research group adjusted the research approach to each clinic's regular routines to minimize strain for each clinic, with care taken not to jeopardize the research agenda. Consequently, the clinicians invited families to participate. Since the research group was dependent on the clinics to establish contact with referred families, extra effort was taken to inform clinicians about the study, its aims, and inclusion/exclusion criteria.

Paper IV is based on a qualitative study design. Qualitative research could be described to investigate characteristics of an aspect, and to gain a "holistic" overview of the context under study (Miles & Huberman, 1994; Silverman, 2000). This approach has been suggested to be of value when examining new fields or complex aspects difficult to capture through quantitative methods (e.g. Denzin & Lincoln, 1998). In Paper IV, narrative interviews were undertaken with selected child psychiatric teams. The aim was to explore regular clinical work with an emphasis on clinical narrations, perceptions and understandings of clinical work.

This thesis thus aimed to use both quantitative and qualitative designs. Quantitative designs are mostly related to a top-down, deductive strategy, meaning that a pre-existing theory or

hypothesis is evaluated, whereas qualitative projects are associated with a bottom-up, inductive strategy, where theory and knowledge are built from information obtained in the study. However, researchers often move back and forth between qualitative inductive and quantitative deductive strategies when studying different phenomena, verifying their results and obtaining new hypotheses (Dahlgren, Emmelin, & Winqvist, 2004). The combined use of quantitative and qualitative designs in this thesis was chosen to improve the understanding of the subject under investigation and augment validity and clinical utility. This strategy is sometimes termed method triangulation, referring to the complementary use of different sources or methods, data collection and analytical procedures (Maxwell, 1996; Miles & Huberman, 1994).

Participants and procedure

Paper I

To evaluate the EARL-20B risk assessment approach, 126 families referred to seven child and adolescent psychiatric clinics in urban and rural areas in mid-Sweden were asked for participation in the longitudinal project. The caregivers were told that participation was voluntary, and that refusal to participate would not influence their contact with the local child psychiatric clinic. Inclusion criteria were consecutive new referrals of boys aged 6 to 12 with either emotional or behavioural problems. The reason for including children with different problems was based on the desire to receive a breadth of problems in the sample and to avoid relying on local clinical traditions for referral or evaluations of antisocial behaviour. The families should also require more than two visits at the clinics. This criterion was set in order to minimize efforts for caregivers of children with minor problems. The exclusion criterion was profound lack of comprehension of the Swedish language, requiring a translator. The most common reported reason for not participating was lack of time. In total, 76 caregivers (60.3%) agreed to participate. For ethical reasons, only limited data was collected about the non-participating families. No statistically significant differences of mean age of the child or reasons for referrals were found between those accepting and refusing participation. However, the rather low participation rate might naturally limit the ability to draw sophisticated and advanced conclusions of data. The referred boys had a mean age of 9.9 years (SD = 2.0) at the time for the baseline assessment. For 72% of the participating boys the mother was the main informant, the father for 9%, and in 16% of the cases both caregivers attended the interview. Other custodians (e.g. foster parents) were main informants for 3% of the boys.

The caregivers were interviewed at each local child psychiatric clinic by the author of this thesis. Thirty interviews were attended by a second last-year psychologist for the estimation of interrater reliability of the risk assessment. After the interview, case records were examined for additional information concerning such things as cognitive functioning or parental characteristics to complete the risk and needs assessment. Four percent of the ratings were changed during this procedure. Ratings were not discussed with the clinician responsible for the child and caregiver(s). The concurrent validity of the risk assessment procedure was evaluated through parent-completed ratings of child behaviour.

Paper II

In Paper II, the same sample of parents as in Paper I were contacted again after six and approximately thirty months to evaluate predictive ability of the EARL-20B. Seventy-four

caregivers accepted participation at both follow-ups (97% of the baseline sample of 76), resulting in only minor changes in numbers of participants. This was important due to the relatively low baseline sample size. A low participation rate might impinge on the ability to draw firm conclusions of the results (see Analyses, p. 38). Mean ages of the boys were 10.5 years (SD = 2.0), and 12.6 years (SD = 2.1) at the six-month and thirty-month follow-up, respectively. A trained research assistant with no previous contact with the family performed a semi-structured telephone interview, yielding information about DSM-IV CD, current life circumstances, and treatments obtained. After the telephone-based follow-up interviews, the caregivers were sent rating scales of child aggressive and antisocial behaviour. Additionally, at the thirty-month follow-up, teachers were administered the same questionnaire as the parents, which were sent directly to the research group in pre-addressed and stamped envelopes. Seventy-two (97% of 74) of these caregivers completed questionnaires at the each follow-up, whereas 55 (74% of 74) of the invited teachers completed questionnaires at the thirty-month follow-up.

We chose to combine ratings from parents and teachers by using the higher score from either report for each item, as suggested as a strategy by Arseneault et al. (2003), Bird, Gould and Staghezza (1992), and Piacentini, Cohen and Cohen (1992). This was mainly motivated by the consideration that reports from single informants can be limited and might not provide the most accurate evaluation of child behaviour in various situations. A combination of ratings from teachers and parents interacting with the child in different circumstances was believed to be most representative and was used to construct the scales in the thirty-month follow-up. In total, parent and/or teacher ratings were obtained for 73 children. These ratings were used as outcome measures to evaluate predictive validity of the EARL-20B. A clinical evaluation of future risk (without the EARL-20B), completed by the clinician responsible for the family during the baseline phase, was used for comparison with the predictive validity of the risk and needs assessment procedure. Most of the clinicians were board certified psychologists ($n = 11$) or child and adolescent psychiatrists ($n = 3$). Eight case managers were social workers or psychotherapists ($n = 8$). The evaluations ($n = 67$) were supposed to be filled in at approximately the same time as the baseline research interview. However, since it was not possible to retrieve a proportion of the ratings completed by clinicians until a few months after the baseline interview, clinician assessments sent in within three months after the interview were analyzed for the six-months follow-up to prevent an overlap in time ($n = 58$; 86% of 67). All clinical evaluations were used for predictions of outcome at the thirty-month follow-up. Frequency of contacts between the clinician and the child and/or family at the time of the evaluation was less than 5 times in 61% of the cases, between 5 and 10 times in 20%, and more than 10 times in 19% of the cases.

Paper III
In the third paper we explored the value of CU-traits in capturing the severity of antisocial behaviour among children with conduct problems. Therefore, a subgroup of the boys in the clinically referred sample in Paper I was used. To achieve a sample of children with only conduct problems, we selected boys from the total baseline clinical sample who fulfilled three or more DSM-IV criteria of ODD, CD or both. This strategy was chosen since the aim was to focus on CU-traits among the heterogeneous group of boys with these problems. This resulted in 41 boys (57% of the total sample) being used for further analyses (Paper III). The mean age

of these boys was 9.60 years (*SD* = 2.12). The characteristics of boys high on CU-traits as rated by the parents were contrasted with those of boys low on these traits. Cross-sectional parent-ratings and research-based assessments were used for comparison while controlling for the effect of a diagnosis of ADHD and number of CD/ODD-symptoms.

Paper IV
In the fourth paper, we wanted to explore how clinical work in child psychiatry with antisocially behaving boys is undertaken and conceptualised. More specifically, we were interested in the experiences and considerations among clinical teams of assessing and treating boys with acting out behaviours. In this study, we wanted to achieve a deeper understanding of everyday clinical work and generate contextualised knowledge. To accomplish this, we chose a qualitative design of the study and planned for inductive, bottom-up analyses of collected data. A sample of clinicians was recruited during 2002. This was achieved through purposeful selection of clinical teams, a procedure commonly used in qualitative research (see Maxwell, 1996; Silverman, 2000). None of the approached teams denied participation. Three of the seven selected teams were from child psychiatric clinics with specialist assignment, and four from general child psychiatric teams. Eleven of the 16 clinicians were women and five were men, between 32 and 60 years of age. Professions represented were child psychiatrists (5), nurses (3), treatment assistants (2), psychologists (4), and social workers (2).

A narrative interview approach was chosen as a strategy to collect data. The interviews were conducted by two psychologists (the first and third author of paper IV) to gain investigator triangulation and reduce the potential for bias in the interview, which has been suggested as a strategy by Fontana and Frey (1998). The narrative approach was achieved through asking each team to describe their work with a boy and his family and reflect on their procedures and management. The team members had been instructed to identify a former case, a boy no older than 13 years with severe antisocial behaviour, for narration in the interview. The teams had access to, and sometimes consulted, their medical records during these discussions. The descriptions were followed with questions if any issues were unclear. Each interview was tape-recorded and transcribed verbatim by the first author. The team members were sent a copy of the transcription for member check and they were allowed to make corrections in the transcribed texts, resulting in only one word corrected during this procedure.

Measures

Early Assessment Risk List for Boys (EARL-20B)
The EARL-20B (Version 2; Augimeri et al., 2001) is a clinical manual developed to make evidence-based information of risk and needs factors related to antisocial behaviour available and practically useful to clinicians. The decision-aid was modelled after a well-known structured clinical assessment tool for violence risk in adults, the Historical Clinical Risk 20 (HCR-20) (Webster et al, 1997). The EARL-20B includes operationalisations of 20 literature-based risk and needs factors for antisocial behaviour to be used for predicting antisocial behaviour and guiding clinical management of boys (see Figure 3).

Figure 3. The Early Assessment Risk List for Boys.

The EARL-20B Version 2 Summary Sheet
(To be used in association with the EARL-20 Version 2 Manual)

Child's Name or ID#: _____   Date: _____

Family Items		Rating (0-1-2)	Critical item
F1	Household Circumstances		
F2	Caregiver Continuity		
F3	Supports		
F4	Stressors		
F5	Parenting Style		
F6	Antisocial Values and Conduct		

Child Items		Rating (0-1-2)	Critical item
C1	Developmental Problems		
C2	Onset of Behavioral Difficulties		
C3	Abuse/Neglect/Trauma		
C4	HIA (Hyperactivity/Impulsivity/Attention Problems)		
C5	Likeability		
C6	Peer Socialization		
C7	Academic Performance		
C8	Neighbourhood		
C9	Authority Contact		
C10	Antisocial Attitudes		
C11	Antisocial Behaviour		
C12	Coping Ability		

Responsivity Items		Rating (0-1-2)	Critical item
A1	Family Responsivity		
A2	Child Responsivity		

Note: Printed with kind permission from the authors.

Information to evaluate the risk factors can be obtained through different procedures, such as interviews with caregivers, investigation of medical records, documentation from social services, or tests/observations of the boy. Each item is scored as "*0*" to indicate absence, "*1*" partial presence, or "*2*" indicating definite presence of the risk factor. An example of an EARL-20B item, *Antisocial values and conduct* (in family), scored 2, is as follows: "families whose members embrace a criminal lifestyle. Although such members need not have a record of convictions, their behaviour is indisputably antisocial". The scores can be added up into a total sum, ranging from 0 to 40. The clinician is also encouraged to mark critical risk factors, and assign a compound evaluation of risk for continued antisocial behaviour (rated as low, medium, or high). The EARL-20B manual was translated into Swedish by two translators and discussed with the original constructors to capture the essence of the twenty risk and needs factors. An adjustment was made in the Swedish version regarding the final procedure for the rating of risk of antisocial behaviour. Risk for continued antisocial behaviour was divided into risk in a shorter (within one month) or longer timeframe (six months or more ahead in time) (cf. SAVRY, Borum et al., 2002). One could also evaluate critical items for each child, but this was not evaluated in the present work. The author was trained to use the EARL-20B by a senior child psychiatrist/PhD and through discussions with the constructors in Toronto, Canada. In this project, the assessment on the EARL-20B was based on parent interviews and reviews of medical records of the boys.

Clinical evaluations of risk

The clinician at the local child and adolescent clinic responsible for each boy/family assessed short and long-term risk for continued antisocial behaviour for the boy (rated low, medium or high). The child clinicians also scored their level of concern for the child, rated from 1 to 10, where 1 is none and 10 very high. These evaluations were completed without the EARL-20B.

Antisocial Process Screening Device (APSD)

The APSD (Frick & Hare, 2001) yields parent and teacher ratings of personal characteristics in 6 to 12 year old children, supposedly associated with psychopathic-like personality in adults as described by Cleckley (1976) and Hare (1991). Each of the 20 items is in the form of one sentence and attempts to correspond to the twenty items included in the Psychopathy Checklist Revised. Factor analyses in clinical samples of children aged 6 to 12 years revealed two dimensions, one associated with impulsivity and conduct problems (I/CP), the other with interpersonal and motivational aspects of psychopathy (callous-unemotional [CU] traits) (Frick, Bodin, & Barry, 2000; Frick et al., 1994; see Table 4).

Table 4. Factor structures of the APSD.

Three-factor model in non-referred youths (Frick et al., 2000)		*Two-factor model in referred children (Frick et al., 1994)*	
Narcissism		*Impulsivity/Conduct Problems*	
16	Thinks he/she is more important	8	Brags about accomplishments
8	Brags about accomplishments	15	Becomes angry when corrected
10	Uses or "cons" others	16	Thinks he/she is more important
14	Acts charming in a way that seems insincere	4	Acts without thinking ahead
11	Teases other people	1	Blames others for mistakes
15	Becomes angry when corrected	11	Teases other people
5	Emotions seem shallow	13	Engages in risky or dangerous activities
Impulsivity		2	Engages in illegal activities
4	Acts without thinking ahead	9	Gets bored easily
17	Does not plan ahead	20	Keeps the same friends (r)
13	Engages in risky or dangerous activities	*Callous-Unemotional*	
1	Blames others for mistakes	3	Is concerned about schoolwork (r)
9	Gets bored easily	12	Feels bad or guilty (r)
Callous-Unemotional		5	Emotions seem shallow
18	Is concerned about the feelings of others (r)	19	Does not show emotions
12	Feels bad or guilty (r)	14	Acts charming in a way that seem insincere
3	Is concerned about schoolwork (r)	18	Is concerned about the feelings of others(r)
7	Good at keeping promises (r)	*Unclassified*	
19	Does not show emotions	10	Uses or "cons" others
20	Keeps the same friends (r)	6	Lies easily and skilfully
Unclassified/not used		7	Good at keeping promises (r)
6	Lies easily and skilfully	17	Does not plan ahead
2	Engages in illegal activities		

Note. (r) indicates that the item is reversely scored.

In community samples from the Southeast USA with 1,136 children in the 3rd, 4th, 6th or 7th grades, three facets were identified, with the addition of narcissistic traits (resulting in somewhat changed item loadings on the two other facets) (Frick, Bodin, & Barry, 2000). Parent-ratings on the APSD were used categorically to design subgroups of children with CU-traits (Paper III). Therefore, a confirmatory factor analysis (CFA) on APSD data with the total sample of 76 boys was conducted to validate the conceptual validity of the employed factors. The two-factor structure previously gained in clinic-referred children fitted the data well (χ^2 [103, $n = 70$] = 34.58, $p = 1.00$, comparative fit index [CFI] = 1.00, goodness-of-fit index [GFI] = .94, root mean square error of approximation [RMSEA] = .00). In contrast, the three-factor structure (Frick, Bodin, & Barry, 2000) fitted the data poorly (χ^2 [132, $n = 65$] = 315.11, $p = .00$, CFI = .53, GFI = .65, RMSEA = .15). Reliability by means of Cronbach's alpha were .79 for the I/CP-factor and .45 for the CU-factor in Paper I and III. The I/CP factor was used in Paper II with an internal consistency of .86.

Diagnostic information on behavioural and emotional disorders (DSM-IV)
DSM-IV psychiatric disorders of the boys were evaluated employing the Swedish version of the Schedule for Affective Disorders and Schizophrenia for school-aged children (*K-SADS*), present or lifetime diagnosis (*version P/L*) (Kaufman et al., 1996). The author was trained to apply the K-SADS P/L by a senior child psychiatrist/PhD in Norway authorised as a tutor by J. Kaufman. Included in the K-SADS is the *Child Global Assessment Scale (CGAS)* (Shaffer et al., 1983), which was developed to the measure severity of psychiatric and social disturbance. The scale ranges from 1 to 100, where 0 indicates a severely disordered child, and 100 a very healthy child. Anchor points describing the functioning of the child are provided for every 10th degree of the scale. Since no assessment of autism spectrum disorders is provided in the K-SADS, questions from the *Autism Spectrum Screening Questionnaire (ASSQ)* were added. This is a 27-item checklist developed by Ehlers and Gillberg (1993; Ehlers, Gillberg, & Wing, 1999) tapping characteristics of Asperger syndrome and high-functioning autism spectrum disorders in children and adolescents. After a period of initial training, twenty-five interviews with caregivers were audio-taped and independently rated by a senior child and adolescent psychiatrist/PhD for estimation of interrater reliability of diagnoses. Interrater reliability estimates for DSM-IV diagnostic categories expressed as Cohen's Kappas (κ) ranged from .45 to .78 for syndromes (any anxiety disorder = .45; any disruptive or attention-deficit disorder = .71; any depressive disorder = .78). The intraclass correlation coefficient ($ICC_{(2,1)}$, 41) for the CGAS was .85. At follow-ups, information about CD symptoms was achieved from telephone interviews based on relevant subscales or question sets from the K-SADS P/L. The interrater reliability was established from eight audio-taped interviews. Cohen's κ for a CD-diagnosis was .75, and $ICC_{(2,1)}$ for CD symptoms .90 at the six-month follow-up. Cohen's κ was 1.0 for a CD diagnosis, and $ICC_{(2,1)} = 1.00$ for number of CD symptoms at the thirty-month follow-up.

Child Behaviour Checklist
The Child Behaviour Checklist (CBCL/4-18) (Achenbach, 1991) is a well-established and widely used instrument providing parent-rated dimensional measures of child functioning. The CBCL contains 118 items of child behaviour and emotions, rated on a three-point scale (*0* = not true, *1* = somewhat or sometimes true, *2* = very true or often true). The checklist contains eight different empirically derived subscales of child problems such as aggression,

delinquent behaviour and social problems, and also gives overall summaries for internalising, externalising and total problems. The CBCL has previously been validated in a Swedish population (Larsson & Frisk, 1999). In this project, only the delinquency and aggressive behaviour subscales were used. Cronbach's alphas were .72 and .92, respectively, in Paper III.

Strengths and Difficulties Questionnaire
The Strengths and Difficulties Questionnaire (SDQ) is a 25-item questionnaire for parent reports of child psychopathology asking about positive and negative attributes of child behaviour (Goodman, 2001). Four subscales capture child difficulties (emotional symptoms, conduct problems, hyperactivity-inattention, and peer problems), whereas one subscale focuses on prosocial behaviour. The items are rated on a similar three-point scale as in the CBCL (*0* = not true, *1* = somewhat or sometimes true, *2* = very true or often true). Good psychometric properties have been reported for the scale (Goodman, 2001). The SDQ has previously been validated in a Swedish population (Smedje, Broman, Hetta & von Knorring, 1999). In Paper I, the internal consistency (Cronbach's alpha) was .70 for emotional symptoms, .68 for conduct problems, .79 for hyperactivity-inattention, .71 for per problems and .77 for prosocial behaviour. Internal consistencies of the SDQ conduct problem scale used in Paper II were .78 at the six-month and .81 at the thirty-month follow up.

Reactive and proactive aggression
Brown, Atkins, Osborne and Milnamow (1996) extended existing scales measuring reactive and proactive aggression, resulting in a 21-item rating scale (*A revised teacher rating scale for reactive and proactive aggression)* with high internal consistency and moderately high factor intercorrelation. This modified version was translated into Swedish and used after back-translation to English. An example of an item tapping proactive aggression is, "Child threatens others" (rated "never", "sometimes", "very often")*. Internal consistencies (Cronbach's alpha) for the subscales in Paper I were .76 (reactive aggression) and .84 (proactive aggression). In Paper II, the internal consistencies were .80 and .81 (reactive aggression) at the six-month and thirty-month follow-ups, respectively, and .87 and .88 (proactive aggression) at six and thirty months, respectively. Internal consistencies in Paper III were .68 (reactive aggression) and .75 (proactive aggression).

Table 5. Summary provided of the studies in the dissertation.

Paper	Aim with investigation	Design and data collection	Outcome measures	Respondent	N
I	Concurrent validity and interrater reliability of the EARL-20B	Cross-sectional study Semi-structured live interviews Questionnaires	Reactive and proactive aggression SDQ emotional symptoms, peer problems, hyperactivity, conduct problems, prosocial behaviour APSD impulsivity and conduct problems (I/CP); CU-traits	Caregivers	76
II	Predictive validity EARL-20B in comparison with clinical evaluations and baseline CD	Follow-up study Semi-structured telephone interviews Questionnaires	*F.U. six months* Reactive and proactive aggression SDQ conduct problems DSM-IV CD criteria	Caregivers	74
			F.U. thirty months Reactive and proactive aggression SDQ conduct problems APSD impulsivity/conduct (I/CP) DSM-IV CD criteria	Caregivers Teachers	74 55
III	Utility of callous-unemotional traits (APSD) for the description of a subgroup of conduct-problem boys	Cross-sectional study of boys with three CD/ODD symptoms or more	Reactive and proactive aggression CBCL delinquency/aggression APSD impulsivity/conduct (I/CP) DSM-IV symptoms Descriptive information on child and family	Caregivers	41
IV	Explore experiences of clinical work	Cross-sectional study Narrative interview	Themes and categories emerging from text	Clinicians	16

Analyses

Quantitative studies

All analyses were preceded by inspection of basic statistical assumptions. In the first evaluation of the risk assessment procedure (Paper I), two estimates of interrater reliability were used. For individual EARL-20B factors on the ordinal level, we calculated Cohen's Kappa (Cohen, 1988), whereas intraclass correlation coefficients ICC (Spitzer & Cohen, 1968) were used for evaluations of agreement for two continuous variables. The ANOVA-based two-way random-effects model ($ICC_{(2,1)}$) described by Shrout and Fliess (1979) was used to allow for a generalisation to other individual raters.

For the study of relationships between continuous variables we used Pearson's product moment correlation coefficients (Paper I-II) and hierarchical linear multiple regression analyses (Paper II). Pearson correlations were also used for estimations of the risk assessments that were evaluated low, medium and high. At these occasions, measures for non-parametric data such as the Spearman correlation coefficient should be used. However, since Pearson correlation coefficients are very well established, and the two procedures produced very similar associations, the Pearson correlations were chosen as indicators of relationships (see also Farrington & Loeber, 2000, for a discussion on dichotomisation of data).

To examine the clinical usefulness of the EARL-20B assessment, we conducted a cluster analysis with all twenty EARL-20B items (Paper I). We based the cluster analysis on all twenty risk and needs factors to investigate the usefulness of the entire tool for constructing a preliminary typology. A series of agglomerative hierarchical cluster analyses using the Ward method and the squared Euclidean distance as dissimilarity measure were conducted to search for homogeneous subgroups among the 76 boys (Everitt, 1993).

To investigate possible group differences concerning categorical variables, chi-square, Fisher test and logistic regressions were conducted (Paper II-III). T-tests, univariate Analysis of Variance (ANOVA), univariate Analysis of Covariance (ANCOVA), and repeated measures ANOVA were used for investigation of group differences on continuous variables, and the Tukey post hoc test was used for establishing group differences (Paper I, III). Partial Eta-squared is provided when comparing groups, to indicate size of the effects found. For some subscales, the requirement of homogeneity of variance in ANOVA was partly violated. However, at these occasions, Levene's test for unequal variances showed the same results as for equal variances. Also, Mann-Whitney non-parametric tests showed significant differences. Additionally, more robust tests for comparison between means, the Welch and Brown-Forsythe F-tests were consulted and showed significant differences for all subscales. Further, since Tukey's post hoc test assumes equal variances, other post hoc tests not assuming equal variances (Dunnet's T3, Games-Howell, and Dunnett's) were consulted with similar results as for Tukey HSD. Therefore, the results were considered as valid and these additional analyses are not presented in the studies.

The predictive validity of a continuous measure for a dichotomous outcome can be analysed using the area under the receiver operating characteristic (ROC) curve (Rice & Harris, 1995). This measure was used in Paper II. A major advantage with the ROC-analysis is that it is insensitive to base rates, and can be used to identify cutoff points since optimal sensitivity and specificity are obtained simultaneously (Mossman, 1994). Sensitivity and specificity over cutoffs of the continuous variable constitute the Area Under the Curve (AUC), which is a measure of validity, ranging from .50 (chance) to 1.00 (perfect positive prediction). No permanent interpretations exist of the AUC-curve, but an AUC above .75 is considered as good (Dolan & Doyle, 2000). The AUC should be interpreted as the probability that a child with antisocial behaviour scores higher on the measure than a randomly selected child without antisocial problems. Other features characterising predictive accuracy were also provided, based on a 2×2 frequency table (see Figure 4). The probability of correctly classifying subjects with a disorder as positive is referred to as the sensitivity of a method, whereas the probability of correctly classifying subjects as negative when they do not have the disorder is denoted as its specificity (Goldstein & Simpson, 1995). The positive predictive value (PPV) of a prediction is the proportion of subjects assessed to be at high risk for a certain outcome and who later exhibit it. Negative predictive value (NPV) is defined as the probability that subjects assessed to have low risk for an outcome do not develop it. The overall accuracy is the proportion of subjects correctly classified. Odds ratio (OR) is the odds of the outcome for a particular value of the independent variable, divided by the odds for the independent value that is one unit lower (Cohen, Cohen, West, & Aiken, 2003). OR provides an evaluation of the strength of an effect or predictive precision, and is unaffected by changes in the prevalence of the predictor or outcome variable (Fleiss, 1981).

Figure 4. Computation of sensitivity, specificity, positive and negative predictive value, odds ratio (OR)[a].

		Antisocial behaviour at outcome			
		Yes	No	Sum	Sensitivity = a / (a+c)
Antisocial	Yes	a	b	a+b	Specificity = d / (b+d)
behaviour in	No	c	d	c+d	Positive predictive value= a / (a+b)
the future	Sum	a+c	b+d	N	Negative predictive value= d / (c+d)
					Prevalence = (a+c) /(a+b+c+d)
					Accuracy = (a+d) / (a+b+c+d)

Note: [a] a, b, c, d, and N are frequencies. *N* = total frequency.

Given the relatively small sample size of clinically referred boys in the present study, the power to evaluate probabilities of significant relationships between independent and dependent variables or differences between groups, given that these really existed, was rather low. Apart from sample size, the power of a study is dependent on the effect size chosen or required and the probability allowed for falsely concluding that there is a relationship or that samples are statistically different when in fact they are not (Cohen, 1988). In this project, the power to detect a significant correlation coefficient of at least .30 or .40 (alpha-level = .05) in the sample of 76 boys was .76 (.30), or .95 (.40), respectively. In Paper III, a smaller sample was used (*n* = 41). Different ways have been suggested to adjust for small samples and the resulting risk for Type II errors (rejecting the hypothesis H_1 when in fact it is true). For instance, allowing for a higher alpha level could be one way. This was chosen as a strategy in Paper III, where we allowed for an alpha-value of .10 (two-tailed). On the contrary, because of the multiple comparisons conducted in Paper I and II, and thereby the increased risk for Type I errors (rejecting hypothesis H_0 when in fact it is true) the alpha levels were set at .01 (two-tailed) when found suitable, otherwise at .05 (two-tailed).

The statistical analyses were performed with the statistical software package SPSS, version 11.5 or 12.0.

Qualitative study
In the qualitative study (Paper IV), the analysis was aided by means of a narrative discourse analysis of the transcribed interviews (see Silverman, 2000). Generally, qualitative analysis is described as involving mapping patterns in a transcribed discourse through the use of coding, testing preliminary themes, and clustering the data (Coffey & Atkinson, 1996; Lieblich, Tuval-Mashiach, & Zilber, 1998; Manning & Cullum-Swan, 1998; Miles & Huberman, 1994; Priest, Roberts, & Woods, 2002; Woods, Priest, & Roberts, 2002). From careful reading of the transcribed transcripts, each of the 4 authors independently coded the text. Labels were attached to meaningful themes and the context in which the theme occurred. Throughout the process, broader categories and themes were constantly compared in order to identify similarities and dissimilarities. The codes were considered in discussions among the researchers until consensus was reached. An example of a coding is given below (Table 6). After final consensus, a detailed coding manual was developed. Agreement between two raters on derived themes in two of the transcripts was 92%.

Table 6. Example of coding and clustering of data.

Excerpt from interview	Pertinent wordings	Reflection	Theme (**T**) Category (**C**)
(**Child psychiatrist**) "He had also made some kind of suicidal attempt" (**Nurse**) "Yes, that's correct, he is…when he is very upset he becomes self-destructive, or at least threatens to be, he has held up a knife against himself at home. And he has said that he wants to take his life and that he doesn't want to live."	Suicidal attempts self-destructive threatens pointed a knife wants to take his life doesn't want to live.	Comorbidity to antisocial behaviour	**T**: Complexity of problems **C:** Descriptions of the child's problems and treatment needs

For assistance in the coding procedure, the computer program N'Vivo was used (NUD*IST Vivo, QSR).

Ethical considerations

The families recruited for the longitudinal study had consulted the child and adolescent psychiatric clinics to obtain support for their child. It was therefore of importance that they were guaranteed that their participation or non-participation in the study would not affect treatment received from the local clinics. Care has to be taken not to persuade families to accept participation. Thus, clinicians responsible for each child were educated on how to ask for participation according to regulations from the Ethics Committee. The information obtained in the research interview was not shared with the clinical staff at the clinic unless a precarious situation for the child was revealed (cf. the Social Services Act [Svensk Författningssamling, 2001: 453]). Prior to taking part in the study, the families were informed orally and in written form about the study, that at any phase they could refuse to continue, and were assured confidentiality. An informed written consent was received from each family. At the follow-ups, the families again consented to participate. Additionally, at the second follow-up they completed a written informed consent that the boy's main teacher was allowed to provide information about the child.

The child clinicians in the qualitative study completed an informed consent after they were informed verbally about the aims of the study. They were informed that the information provided would be handled confidentially and that identifying characteristics of the family would be changed to assure anonymity of the family and of the team. The boy and family described by the clinical teams were kept anonymous to the psychologists/research assistants.

Written material was stored in the Central Archive of the National Board of Forensic Medicine in Huddinge. This is under strict security regulations. The study designs of the studies were reviewed and approved by the Regional Research Ethics Committee of the Karolinska Institute (Paper I, II, III: #00–258; Paper IV: #02–170).

RESULTS

Descriptive information about the referred boys and their families
Some descriptive information about the boys and their families participating in the longitudinal study is presented to allow for comparisons with other clinical samples.

First, during the baseline period, the mean global assessment of functioning (CGAS) for the boys was 56.8 (*SD* = 12.2), ranging between 31 and 80. Thus, the participating boys represented a spectrum of both mild and severe cases. To assure some level of clinical concern, DSM-IV diagnoses were only utilised for boys with a CGAS of 70 or lower, since scores above 70 have been suggested to indicate normal functioning, (Dyrborg et al., 2000; Steinhausen, 1987). Whereas 53 (70%) of the sample fulfilled criteria for one or several DSM-IV disorders, 41 (54%) boys were diagnosed with ODD (*n* = 25 [33%]) or CD (*n*=6 [8%]), and/or AD/HD (*n* = 28 [37%]). The number of boys diagnosed with DSM-IV disruptive behaviour and AD/HD at baseline in this sample seem comparable to prevalence estimates earlier reported from Mental Health clinics (Kopp & Gillberg, 2003; Garland, et al., 2001). Even though the total estimate of DSM-IV diagnoses could be considered high, this is similar to prevalence rates in other clinical settings. For instance, in a comprehensive review of psychiatric diagnoses, Garland et al (2001) reported prevalence estimates of 60.8% for any DSM-IV diagnosis in child and adolescent clinics. These numbers did not include the prevalence of psychosis, phobias, or autism. The boys in the present study were evaluated including these three disorders, so a higher prevalence rate was to be expected. Overall, only parents were used as main informants for the diagnoses. Naturally, obtaining information from the boys through interviews or observations would have been advantageous. However, children have been found to underreport their own conduct behaviour and parents are mostly considered as valid informants on disruptive behaviour in younger children (Loeber, Green, Lahey, & Stouthamer-Loeber, 1991; Jensen et al., 1999). For affective disorders, children seem to be important as informants since parents have been found to underestimate such symptoms (Schwab-Stone, Fallon, Briggs, & Crowther, 1994). Given that the focus for this thesis was on conduct problems, the choice of parents as informants for diagnostic information was considered less problematic.

A relatively high proportion of the boys' parents had completed at least senior high school (90%). One fifth had been sentenced to prison at the time for the first interview. No statistically significant differences were found with respect to level of education or having been sentenced to prison between parents with children with or without CD/ODD-problems. While not an identical measure, the number of boys with parents born abroad (7% of the mothers and 17% of the fathers) could be compared to the 14% of 0-18-year-old children with a first language other than Swedish referred to an out-patient child psychiatric clinic in Sweden (Kopp & Gillberg, 2003).

Second, at each follow-up, the presence of DSM-IV CD was evaluated by telephone interviews. This resulted in a CD baserate of 11 (15%) and 9 (12%) at the six-month and thirty-month follow-ups, respectively. Again, the behaviour should cause clinically significant impairment in social, academic, and/or family functioning for a diagnosis to be assigned.

Between baseline and the second follow-up, 62 (85%) of all children had received some treatment. Twenty-six of these children (34% of the total sample) received evidence-supported treatment such as parent management training or psychostimulants (cf. Fonagy & Kurtz, 2002), as evaluated from the reports by the parents. Furthermore, 8 (11%) and 15 (21%) of the families reported on a major negative life event, such as parental divorce or death of a family member at the six-month and thirty-month follow-ups, respectively. In contrast, 16 (22%) at the six-month and 15 (21%) at the thirty-month follow-up reported on a positive major life event, such as moving to a new city or getting a new job. In total, life circumstances changed, sometimes rather drastically, for between 30-40% of the families during the follow-up period.

Swedish validation of the Early Assessment Risk List for boys (EARL-20B), a decision-aid for use with children presenting with conduct-disordered behaviour (Paper I)

The general aim of Paper I was to assess interrater reliability and provide preliminary concurrent validity of the EARL-20B. Furthermore, we wanted to identify potentially homogeneous subgroups of boys with similar constellations of EARL-20B risk and needs factors.

Major findings

The EARL-20B summary scores for all referred boys ranged from 1 to 26, with a mean of 12 ($SD = 5.6$). Since the sample also included subjects with symptoms other than disruptive behaviour, separate analyses were performed for boys with signs of behaviour disturbances (i.e. either referred for or diagnosed with any disruptive disorder during the research interview, $n = 54$). As expected, this resulted in a slightly increased average EARL-20B total sum of 14 ($SD = 5.7$). Further, if only boys diagnosed with CD or ODD (from the research interview) were included ($n = 31$), the mean value increased to 16 points (SD = 5.6). The interrater reliability of individual EARL-20B items was evaluated with Cohen's Kappa (κ). The estimates ranged between .30 and .87 with an average of .62. Whereas most interrater reliability estimates were moderately good (κs = .40 -.60), the two items *Abuse/Neglect/Trauma* and *Coping Ability* were below κ .40, which is considered poor (Cohen, 1988). The overall estimates of risk for antisocial behaviour received acceptable κs above .40. Interrater reliability ($ICC_{(2,1)}$) of the summary score of all 20 items was a good .92.

The associations of assessments based on the EARL-20B to broader scales of antisocial behaviour (SDQ conduct problems) were mostly positive and moderate to high (rs .48 to .65), whereas scales measuring reactive and proactive aggression and impulsivity/conduct problems were positively related to the EARL-20B with varying magnitude of the correlation coefficients (rs .31 to .68).

Four tentative clusters of referred boys were identified from the hierarchical cluster analysis. One of the clusters (4; $n = 28$) was characterised by individuals with lower EARL-20B item scores in general. This cluster seemed to reflect boys and families with *normal functioning* with respect to factors related to risk for the development of antisocial behaviour. On the contrary, boys/families found in cluster 1 ($n = 18$) had elevated scores on as many as 12 of the 20 EARL-20B items, several specifically related to *antisocial history, lifestyle and attitudes*. When performing analyses of variance across clusters, cluster 1 boys were characterised by

higher mean values on parent rated scales of aggression and impulsive and conduct problems than were those in the normal cluster (4). Individuals in cluster 2 ($n = 13$) had more *social risk factors* such as neighbourhood, support, family dysfunction and child trauma, and received higher means than cluster 4 boys on parent-rated proactive aggression. Finally, subjects in cluster 3 ($n = 14$) were characterised by an *early start of behaviour difficulties* and *antisocial attitudes*. The EARL-20B means for each cluster were: Clusters 1) $M = 19$, range 16-26; 2) $M = 16$, range 10-23; 3) $M = 11$, range 7-14; and 4) $M = 8$, range 1-12, respectively. Prevalence rates of CD ($n = 6$) across clusters were 5 (83% of all boys with CD) and 1 (17%) in clusters 1 and 2, respectively (χ^2 (3, $N = 76$) = 13.6, $p < .01$).

Comments

These findings confirm the promising interrater reliability estimates of the total EARL-20B sum previously reported by the constructors. The $ICC_{(2,1)}$ achieved was excellent, and most individual items attained at least acceptable κ values. However, two individual items were difficult to comprehend and rate. One of these items, *Abuse/Neglect/Trauma* (κ .30), was defined relatively broadly, covering several areas, which might have contributed to the different weighing of information. Since parents were informants and the information covering these issues may be sensitive to disclose, these might not have been revealed thoroughly. Also, assessors should evaluate how the events have affected the boy's functioning, which might be difficult to discern from influences of other aspects in life. The other item with a low κ, *Coping ability* (κ .38), was defined broadly to capture depressive reactions and coping difficulties. As seen in other studies, affective symptoms might be difficult for parents to report on (Loeber et al., 1991). In discussions with the constructors, the purpose of both items was elucidated.

Even though the concurrent validity of EARL-20B-based assessments could be considered decent, they are of preliminary status. First, the EARL-20B was not primarily composed for assessment of current, but of *future* risk for antisocial behaviour. Therefore, predictive validity is a very important facet of the validity aspects of the EARL-20B. Secondly, the EARL-20B was based on information from the parent and medical records, and parents completed the scales evaluating child behaviour. The use of the same informants may lead to a risk for inflated associations. Nevertheless, the EARL-20B is based on a summary score of several other risk factors in addition to the antisocial behaviour, whereas the outcome measures scored by the parents in the study only refer to antisocial/aggressive behaviour. This aspect was therefore not considered to be of critical concern for the interpretation of the findings.

The EARL-20B is a checklist composed of separate risk factors and not constructed to capture any underlying concepts such as personality traits. Accordingly, when evaluating how the EARL-20B could be used to identify subgroups of boys with antisocial behaviour, which might improve treatment planning, we chose not to conduct analyses based on assumptions of underlying concepts (e.g. factor analysis). Instead, we performed a cluster analysis. The small sample of 76 subjects limits the ability to identify subgroups when all items are used. Inclusion of approximately 5 subjects per item has been suggested as a guideline (Everett, 1993). This would imply at least 100 participants to evaluate the EARL-20B. However, since we wanted to evaluate subgroups identified by the risk assessment *tool* and not by separate

risk factors, we decided to include all items with a risk for reduced power. Evaluating a risk assessment tool with cluster analysis is a reasonably novel approach. If the typology is found to have validity and stability over time, it could be useful for enhanced identification of more perilous combinations of risk factors and other characteristics to be targeted in treatment.

In summary, the findings indicate that adequate interrater reliability can be obtained for EARL-20-based ratings of risk from interviews with caregivers and examined medical records. Additionally, preliminary good concurrent validity was found for the EARL-20B, and a novel approach for improving the clinical utility of a risk assessment tool was investigated.

Predicting aggressive and disruptive behaviour in referred 6-12 year-old boys: Prospective validation of the EARL-20B risk/needs checklist. (Paper II)

The aim with the second study was to investigate EARL-20B predictive validity for antisocial behaviour at six and thirty months, respectively. We also wanted to compare different types of EARL-20B-based ratings of risk with independent clinician assessments of risk made without any structured decision-aid and CD at baseline. Further, we investigated whether the associations between baseline predictions and outcome were affected by evidence-based treatment administered to the family.

Major findings

Overall, the EARL-20B showed good predictive validity. The EARL-20B-baseline estimates were mostly moderately positively correlated to the ratings and evaluations of aggressive and conduct-disordered behaviour at both follow-ups (Table 7).

Table 7. Associations of EARL-20B-based and parallel clinician (not EARL-20B-based) baseline evaluations of risk for aggressive and disruptive behaviour and outcome in 76 boys referred to child psychiatry.

	Six-month follow-up			Thirty-month follow-up			
	Reactive/proactive aggression		SDQ	Reactive/proactive aggression		SDQ	APSD
Predictor	Reactive	Proactive	Conduct problems	Reactive	Proactive	Conduct problems	Conduct/ impulsivity problems
EARL-20B evaluation							
Total sum	.31**	.53**	.50**	.20	.38**	.25	.35**
Short-term risk for antisocial behaviour[a]	.47**	.58**	.53**	.31**	.50**	.39**	.47**
Long-term risk for antisocial behaviour[a]	.19	.39**	.35**	.27	.40**	.28	.37**
Clinician evaluation							
Overall concern[b]	.04	.11	.25	.20	.18	.20	.14
Short-term risk for antisocial behaviour[a]	.21	.18	.23	.12	.22	.25	.21
Long-term risk for antisocial behaviour[a]	.17	.23	.23	.14	.21	.21	.14

Note: All figures are Pearson correlations. ** $p < .01$. [a]Rated as low, medium, or high. [b]Rated 1 to 10.

In general, clinical evaluations of child risk for future antisocial behaviour (made without the EARL-20B) were not strongly associated with parent and teacher rated conduct problems and

aggressive behaviour. The value of composing risk estimates of low, medium, or high short/long-term risk in addition to a dimensional summary score when predicting antisocial behaviour was investigated through separate hierarchical linear regression analyses for EARL-20B-based and clinician-composed estimates. First, short- and long-term EARL-20B-based risk were added to the EARL-20B total sum in two consecutive steps, using parent and teacher ratings of antisocial behaviour as outcome. The EARL-20B short-term risk contributed significantly to the explained variance in antisocial behaviour and was the only estimate significantly associated to outcome in the multivariate model. Second, similar hierarchical regression analyses for clinician predictions (low-medium-high short- and long-term risk) over the dimensional clinician rating, resulted in non-significant relationships to outcome.

To evaluate possible incremental validity of the EARL-20B over clinician evaluations and baseline CD and examine the effect of treatment of outcome, new hierarchical linear regression analyses were performed. The EARL-20B short-term risk (which outperformed the other EARL-20B-based estimates) was entered as a predictor together with clinician concern and baseline CD. The decision-aid increased the explained variance significantly for 5 out of 7 outcome variables, indicating incremental validity of the EARL-20B over clinician evaluations and baseline CD. When treatment, defined as cognitive behaviour therapy, structured family therapy, or use of stimulants, was finally entered into the regression equations, it did not contribute significantly to explained variance in outcome.

The abilities of the EARL-20B-based and clinician-based ratings to predict CD after thirty months were examined through investigations of the area under the receiver operating characteristic curve (AUC of the ROC). The EARL-20B total sum AUC was .87 (95% CI: .75-.94), whereas the AUC estimate obtained for unstructured clinician evaluations was .64, (95% CI: .45-.82). A baseline EARL-20B total sum of 17 was associated with a sensitivity of .78 and specificity of .78, for predicting CD at thirty months.

Furthermore, we calculated unadjusted OR:s from bivariate logistic regressions to evaluate associations between EARL-20B-based estimates, clinical evaluations, baseline CD, treatment, and CD problems at outcome. EARL-20B-based estimates were significantly related to CD at each follow-up (e.g. the EARL-20B total sum at the six-month follow-up: OR = 1.13 [95% CI: .01-1.27], $p < .05$; EARL-20B total sum at the thirty-month follow-up, OR = 1.33 [95% CI: 1.11-1.59], $p < .01$), whereas clinician evaluations, baseline CD or treatment were not. In multivariate logistic regression models, we examined whether EARL-20B-based high risk added to predictions based on the EARL-20B total sum. The EARL-20B-based short-term high risk estimate predicted CD at six months (adjusted OR = 25.06, 95% CI: 2.71 – 231.92) independently of the other EARL-20B estimates, while the EARL-20B total sum independently predicted CD at thirty months (adjusted OR = 1.35, 95% CI: 1.06-1.71).

Finally, assessments of high risk according to the EARL-20B seemed to improve chances for correctly identifying those at high risk for developing CD (PPV 39% at the six-month, and 60% at the thirty-month follow-up for EARL-20B short- and long-term risk, respectively).

Comments

To our knowledge, no published study has both evaluated a risk assessment tool for boys and tried to capture clinical evaluations of risk. Whereas EARL-20B-based assessments of risk were moderately associated with continuous outcome measures, clinical evaluations were not. Paper II contributes to the body of knowledge of evaluations by focusing on clinicians in child psychiatry in a naturalistic design, where the clinicians were able to assemble the information they wanted to make the evaluation. The better estimates obtained with the EARL-20B suggest that, as a group, clinicians do not collect or weigh the information in a way that is in compliance with how to evaluate risk for future antisocial behaviour. Few studies have focused on the ability of child clinicians to predict antisocial behaviour.

It's interesting to note that a low or very high prevalence base has the tendency to produce a large number of false positives. To compare with our own data, optimal estimates with a base rate of 15%, choosing a sensitivity of at least 50% (half of the children correctly identified) and a specificity of 85%, gives an optimal PPV of 38%, and NPV of 92%, whereas a base rate of 12% under the same conditions gives an optimal PPV of 33% and NPV of 93%. This implies that with a higher base rate, everything else being similar, PPV:s improve (lowering the false positives). In contrast, ROC-analyses have the advantage of not relying on base rates. The AUC of the ROC for CD at the thirty-month follow-up indicated that the EARL-20B outperformed clinical evaluations. Other research on risk assessment tools shows that the obtained estimate of .87 at thirty months is relatively high. In Mossman's (1994) review of violence prediction, average AUCs of the ROC was .78. Furthermore, AUCs of the ROCs for youth risk assessment instruments (e.g. Structured Assessments of Violent Risk for Youth, Borum et al., 2002) when predicting one-year general and violent recidivism among adolescents were reported to be between .71 and .78 (Catchpole & Gretton, 2003).

Given the serious consequences of disruptive behaviour and the lack of financial, clinical and, at times, adequately trained resources in child mental health services, there would seem to be a need for improved identification of young children at risk for developing antisocial behaviour. Paper II contributes with information on a new approach for evaluations in clinical psychiatric settings, providing a possible link between research-based information of risk and clinical practice.

Findings not presented in Paper II

In Paper I, we identified four tentative clusters of boys with similar patterns of EARL-20B risk factors in an attempt to find more homogeneous groups of children. Boys in cluster 1 were characterized by several risk/protective factors, in cluster 2 mainly by social/familial risk factors, and in cluster 3 by an early start and antisocial attitudes, whereas boys in cluster 4 were individuals with lower EARL-20B item scores in general. To compare clusters from baseline over the two follow-up periods, repeated measures ANOVA were conducted with proactive/reactive aggressive behaviour and SDQ conduct problems used as outcome (these were evaluated at each assessment period). Mean ages did not differ between the clusters at any assessment. There were significant differences between the groups (clusters) regarding all outcome measures (SDQ conduct problems: F [3, 64] = 8.86, $p < .01$, partial eta squared = .12; proactive aggression: F [3, 60] = 8.33, $p < .01$, partial eta squared = .29; reactive aggression: F [3, 61] = 2.79, $p < .05$, partial eta squared = .12). There were also interactions

between groups (cluster belonging) and time for SDQ conduct problems (F [6, 126] = 8.86, p < .01, partial eta squared = .22), and reactive aggression (F [6, 120] = 3.93, p < .01, partial eta squared .16) but not proactive aggression (F [6, 118] = .84, n.s.). The interactions were caused by a slight decrease in mean levels of parent/teacher rated reactive aggressive behaviour and SDQ conduct problems for boys characterised by several risk factors at baseline (i.e. cluster 1), and subsequently elevated ratings for boys with the baseline risk factors antisocial attitude and early start of antisocial behaviour (i.e. cluster 3).

As shown in Table 8, over the assessment periods parent/teacher ratings for cluster 1 boys were significantly higher as compared to cluster 4 boys. It is interesting to note that cluster 1 boys were rated high on both proactive and reactive aggression. This combination, and proactive aggressive behaviour in particular, has been shown to predict persistent delinquent behaviour in children (Vitaro et al., 1998). The results are in line with earlier findings of a high likelihood of persistent antisocial behaviour among children with many risk factors (see Loeber and Farrington, 1998). Cluster 2 boys were also characterised by several risk factors at baseline, mainly of social/familial character. As shown in Table 8, these boys had relatively high ratings on proactive and reactive aggressive behaviour over the measurement periods, but were not statistically different from boys in cluster 4 regarding reactive aggression. Whereas ratings of antisocial behaviour for cluster 1 and 2 either remained stable, or decreased slightly, boys in cluster 3 were increasingly described as exhibiting more antisocial behaviours, significantly disparate from cluster 4 regarding conduct problems (as were clusters 1 and 2). At the second follow-up, all boys were about 12 years old, which is the beginning of a limited period in life when conduct-disordered behaviours intensify for many children (Moffitt, 1993). Further follow-ups of the sample would disclose whether boys in any of the clusters remain conduct-disordered over time. Most of those with CD at thirty months belonged to cluster 1 (7 boys comprising 78% of all with CD, or 39% of cluster1: the 2 other CD boys belonged to cluster 2, comprising 22% of all with CD, or 18% of cluster 2).

Table 8. Parent- and teacher-rated child behaviour at baseline, six-month and thirty-month follow-ups, across four EARL-20B-baseline clusters of boys referred to child psychiatry.

		Cluster				Post hoc analyses
		1 (n = 18) M (SD)	2 (n = 11) M (SD)	3 (n = 11) M (SD)	4 (n = 28) M (SD)	Tukey HSD
SDQ Conduct problems	Baseline	5.61 (1.54)	4.64 (2.80)	3.91 (2.07)	2.89 (2.01)	
	Six-month f.u.	5.22 (2.13)	5.63 (2.50)	4.63 (2.50)	2.29 (1.73)	1, 2, 3 > 4
	Thirty-month f.u.	4.67 (3.09)	3.82 (2.71)	5.55 (2.46)	2.43 (1.94)	
Proactive aggression	Baseline	9.47 (3.06)	8.91 (4.66)	6.45 (3.14)	4.80 (3.54)	
	Six-month f.u.	8.71 (4.62)	8.81 (4.05)	6.73 (3.41)	3.60 (3.32)	1, 2 > 4
	Thirty-month f.u.	9.35 (5.16)	7.45 (4.68)	7.75 (4.59)	4.80 (4.09)	
Reactive aggression	Baseline	9.33 (2.17)	8.18 (2.27)	6.73 (2.41)	7.04 (2.92)	
	Six-month f.u.	8.89 (2.40)	8.00 (2.37)	8.00 (2.68)	6.32 (2.97)	1 > 4
	Thirty-month f.u.	7.56 (2.79)	7.82 (3.13)	9.09 (2.12)	6.44 (2.99)	

Note: f.u. = follow-up.

These results are intended as hypothesis generating. They could indicate a value of identifying both the number of, and some specific risk factors (e.g. antisocial attitude and early start of antisocial behaviour), to identify whether a disruptive behaviour may persist over time.

Callous-unemotional traits are associated with clinical severity in referred boys with conduct problems (Paper III)

In adult literature, a certain subgroup of criminal offenders has been identified with more pronounced offending behaviour and deficits regarding affective (callous-unemotional [CU] traits) and interpersonal functioning (see Frick, Barry, & Bodin, 2000). Albeit controversial, the aim of Paper III was to evaluate the usefulness of CU-traits for the identification of a subgroup of conduct-problem children with more severe disruptive behaviour. According to definitions of CU-traits (Frick & Hare, 2001), children with these suggested traits in childhood may be characterised by shallow emotions, charming ways of acting that seem insincere, indifference about the feelings of others, and lack guilty feelings. Since AD/HD and CD/ODD are related to higher estimates of antisocial behaviour, we consequently chose to control for these diagnoses.

Major findings

We designated a subgroup of boys with three or more CD and/or ODD DSM-IV criteria. Twenty-two boys fulfilled criteria for AD/HD, 6 for CD, and 26 for ODD. The boys' average age was 9.60 years (*SD* = 2.12). Boys high on CU-traits (5 points or more on the APSD) are referred to as the High CU-group and the Low CU-group describes boys low on these traits (below 5 points). No differences were found between the two groups regarding prevalence of disruptive disorders, anxiety or depression. However, the High CU-group had a six times higher odds of being diagnosed with dysthymia, independent of AD/HD and ODD/CD co-morbidity. As seen in Table 9, boys in the High CU-group exhibited significantly higher levels of CBCL aggressive and non-aggressive delinquent behaviour, as well as more pronounced reactive and proactive aggressive behaviour as compared to the Low CU-group, independent of AD/HD and number of ODD/CD symptoms. Partial Eta-squared, calculated to evaluate effect sizes, were .18 and .24 (CBCL delinquent and aggressive behaviour, respectively) and .18 and .23 (proactive and reactive aggression, respectively).

Table 9. Different types of disruptive and aggressive behaviour in clinically referred conduct problem boys low and high on callous unemotional traits.

Variable	Callous-unemotional traits			
	Low	High		Analysis of Covariance[‡]
	n = 27 [†]	n = 13	*t*	*F*
	M (SD)	M (SD)	(df = 38)	(df = 1, 36[§])
Child Behaviour Checklist score				
Delinquent behaviour	5.07 (2.85)	7.85 (3.76)	-2.59*	4.45*
Aggressive behaviour	20.96 (7.08)	28.92 (7.10)	-3.33**	7.51**
Aggressive behaviour subtype				
Reactive aggression	7.86 (2.30)	10.15 (1.46)	-3.86**	8.06**
Proactive aggression	7.89 (3.00)	10.77 (3.24)	-2.77**	5.06*

Note. ** $p < .05$, *** $p < .01$. [†] The number of subjects in the group low on callous unemotional traits was reduced to *n*=27 because of missing data for one subject. [‡] Controlling for AD/HD and number of ODD/CD symptoms. [§] Degrees of freedom for comparisons of the reactive aggressive subscale scores were (1, 37).

The High CU-group was significantly more likely to be characterised by poor household circumstances, such as financial problems and crowded homes, and high stress in the family, as compared to the Low CU-group. No difference between the groups on responsivity to treatment in the family was identified. Only one boy (8%) in the High CU-group was rated as responsive to treatment as compared to eight boys (29%) in the Low CU-group (the difference did not reach statistical significance). High stress in the family remained significantly more common in the High CU-group also when controlling for AD/HD diagnosis and ODD/CD symptoms in logistic regression analyses.

Comments
The findings in Paper III provide further preliminary support for the utility of identifying CU-traits in childhood. In line with earlier research, a subgroup of conduct-problem boys with more severe levels of different forms of aggressive and antisocial behaviour was identified, independent of the number of ODD/CD symptoms or AD/HD diagnosis. Furthermore, high CU-boys were more likely to have a highly stressed family, a finding not earlier reported. This stress could emanate either from one or more major situations, or a number of seemingly minor events, such as marital discord or mental illness. Since CU-traits and family stress were measured concurrently, we are not able to draw conclusions of causality regarding their relationship. Level of stress in the family has seldom been investigated in relation to CU-traits but might be of importance to include in future models evaluating these traits. To conclude, the present study has reported on concurrently reported aspects of CU-traits. However, the boys were not followed over time, so we do not know the stability of the differences between groups. A few other studies have confirmed the temporal stability of CU-traits efficacy in designing a severely disordered group of boys with higher levels of antisocial behaviour (e.g. Frick, Cornell, et al., 2003).

Findings not presented in Paper III
Is it a high total score on the EARL-20B, a combination of specific risk factors, CU-traits, or a combination of these approaches that capture more severe antisocial behaviour in children? To explore the usefulness of focusing on several risk factors and/or CU-traits, boys were merged into four subgroups based on whether they had a high or low EARL-20B total sum, and high or low levels of CU-traits. Due to the small sample size in Paper III, the larger sample in Paper I was used ($n = 76$, whereof four subjects had data missing). First, a "control group" ("group 1"; $n = 36$) was composed of children with a summary score below 16 on the EARL-20B (mean level among children with conduct problems) and a low score on CU-traits (< 5 points, as in Paper III). Children below 16 on the EARL-20B and high on CU-traits formed "group 2" ($n = 10$). Additionally, children with a summary score at or above 16 on the EARL-20B and low on CU-traits created "group 3" ($n = 14$) with many risk factors but low on CU-traits. Lastly, those at or above 16 on the EARL-20B and high on CU-traits comprised "group 4" ($n = 12$).

The four groups were evaluated with respect to concurrent levels of aggressive and delinquent behaviour used in Paper III. As shown in Figure 5, children high on *both* EARL-20B and CU-traits seemed more likely to be aggressive or delinquent than children low on one or both of these traits. Children high on EARL-20B/low on CU-traits also tended to have elevated means on the behaviours of interest, whereas the few children identified with high levels of CU-traits but few other risk factors mostly were more similar to those at low risk.

Figure 5. Comparisons on mean levels of aggressive and delinquent behaviour for four groups of children high or low on EARL-20B total score and Callous unemotional traits.
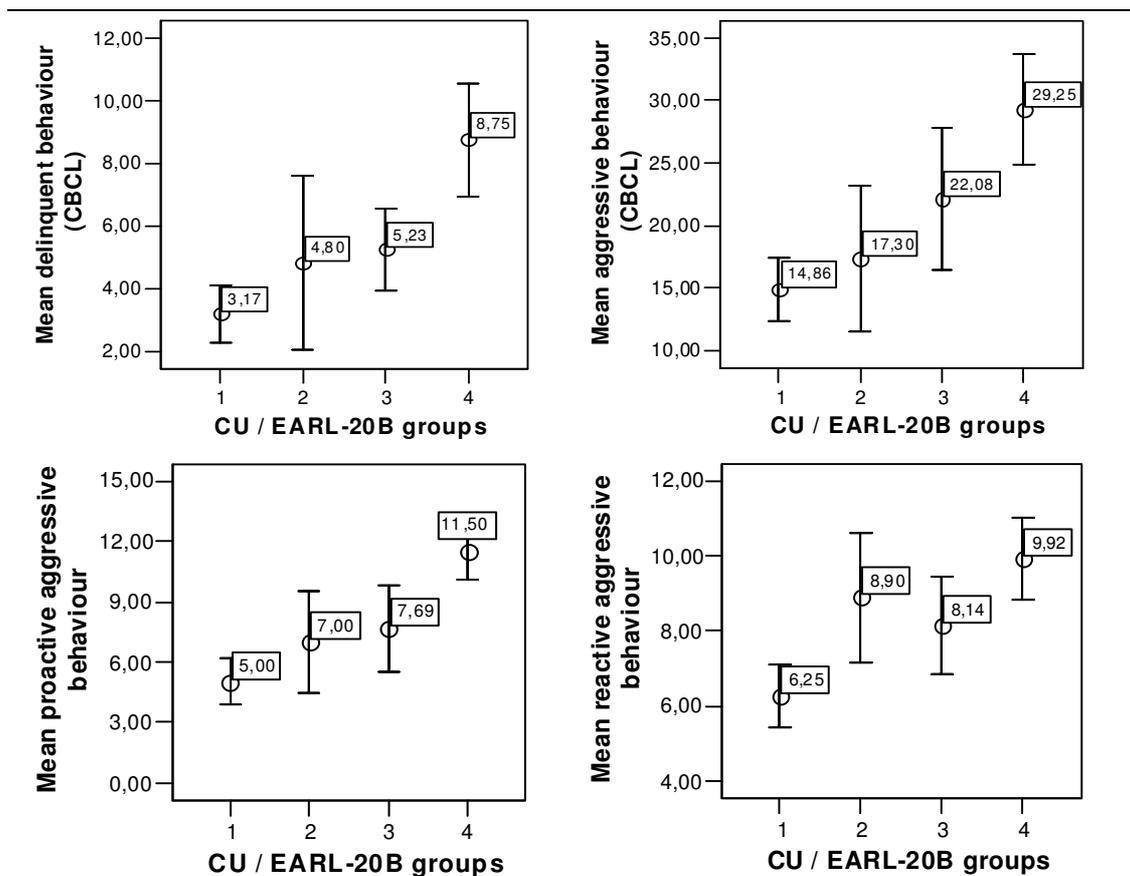
Note: Group 1=Low EARL-20B/Low CU (*n*=36), 2=Low EARL-20B/High CU (*n*=10), 3=High EARL-20B/Low CU (*n*=14), 4=High EARL-20B/High CU (*n*=12). EARL-20B=Early Assessment Risk list for Boys. CBCL=Child Behaviour Checklist. CU=Callous unemotional traits.

These illustrations may suggest that *both* many risk factors *and* certain personality traits such as CU-traits could be of importance for identifying children at risk for severe antisocial behaviour. The results, if evaluated further and followed-up over time, could be of importance for both researchers and clinicians alike for improved early identification of high-risk children.

Clinical work with antisocial behaviour in boys: Narrative interviews with clinical teams in Swedish child and adolescent psychiatry (Paper IV)

The fourth study had a qualitative approach. It was conducted to generate an understanding of how contextually pertinent aspects may relate to clinical work with boys displaying antisocial behaviour. The aim was to understand relevant aspects encountered during work. Therefore, clinical teams were asked to describe their work with a boy referred with antisocial behaviour. The results were related to evidence-based practices referred to in literature.

Major findings

Based on the qualitative discourse analysis, three overarching categories were identified that described the narratives of the clinical teams. The three categories and their associated

subthemes are illustrated in Figure 6. The arrows intend to indicate that the teams described these aspects as interrelated and sometimes dependent on each other.

Figure 6. The three overarching categories and related subthemes for clinical work with antisocial boys.
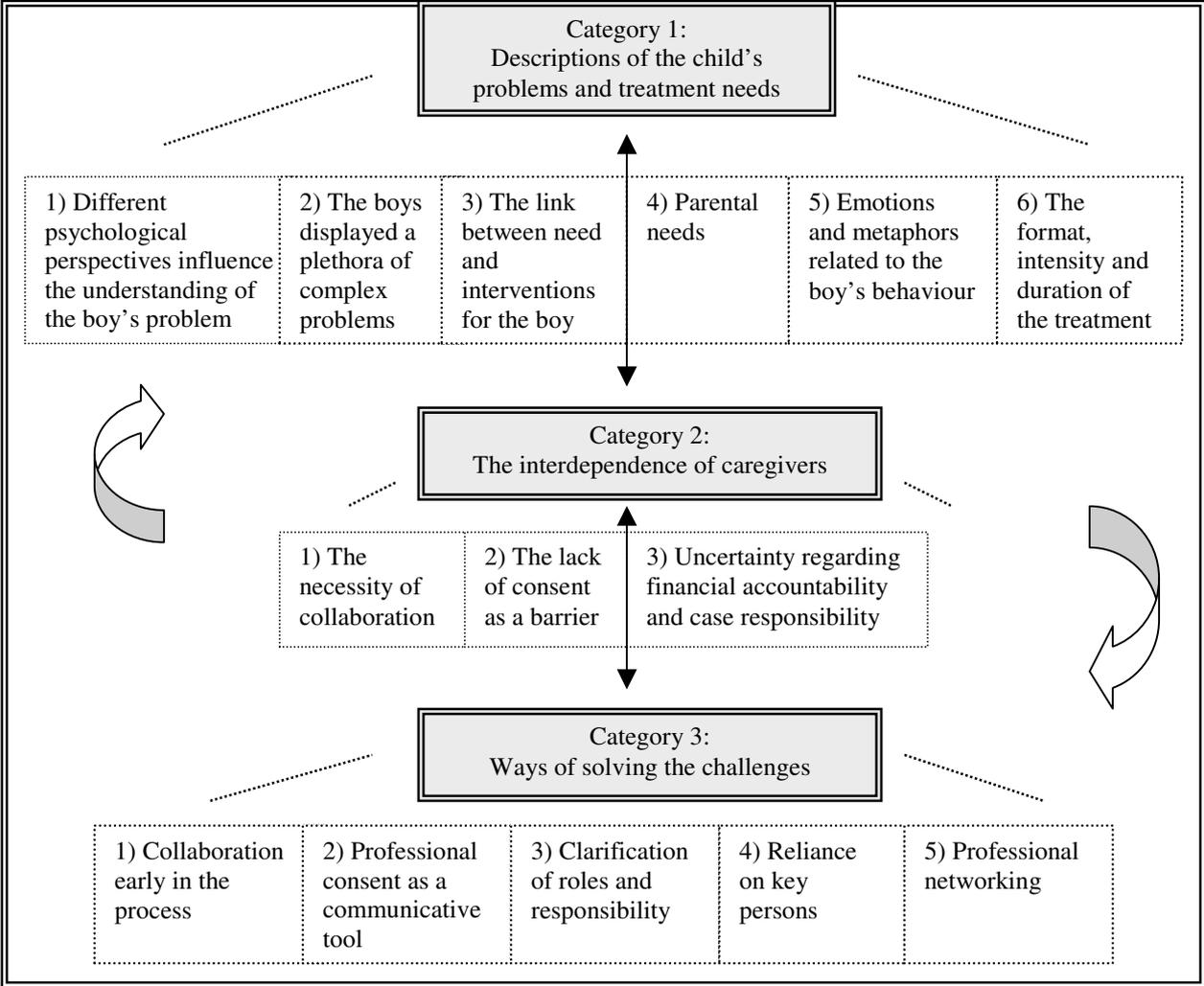
The first category seemed related to a maturing understanding of the child's difficulties and how they were to be managed. The team discussions illustrated how different psychological perspectives might affect the team-interpretation of the case (category 1; theme 1). Also evident from the team narrations was the multitude of complex problems the boys presented with (theme 2) and the massive quantity of aspects the team should deal with (themes 4, 5, 6). An excerpt is provided to exemplify how one of the teams reflected on their emotions in relation to the boy's behaviour (theme 5):

> (Psychologist) "Aggressive children who act out arouse much more concern among all those involved. Both school, parents, and all this about actions and interventions…well there is more anxiety, one wants things to happen immediately, you know…" (Social worker) "…it creates panic, it creates disruption. And it creates all sorts of things, the tempo is very high."

The second emerging category consisted of a combination of different aspects related to the overall case management. The teams emphasised the importance of collaboration and consent

with caregivers as well as with other professionals (category 2; theme 1) but were often disappointed with the lack of collaboration, as seen in the following excerpt:

> (Psychologist) "It takes far too long time before he gets the right help (*author's note: from social welfare*)." (Social worker) "My first thought too. That it is so hard to arrange for his needs that you capture so early. Really tough." (Psychologist) "We thought that we understood the seriousness very early" (Psychiatrist) "One can wonder why the process seems to get stuck in such a horrible way."

Among the aspects clinical teams found significant for signalling risk for failure were lack of consent (theme 2) and unclear responsibilities (theme 3). However, the teams still had to make their way through.

The third category refers to an emerging understanding of why the work with other caregivers sometimes succeeded. Five different descriptions of strategies used were identified (category 3, themes 1-5), whereof the following excerpt exemplifies the need for clarification of roles and responsibility (theme 3).

> (Social worker) "It is extremely important to clarify who does what. This is for us in child psychiatry to see to, that and that which belongs to social services, and that other part to the school. That is, unambiguous roles, and that you know your responsibility."

Comments
Given the risks associated with early onset of disruptive behaviour, lack of knowledge on how to efficiently support these children and their families is a major concern. The clinical context has been suggested as one possible arena for advancing the understanding of aspects that might hamper the implementation of interventions or impede the usefulness of procedures, such as employing decision-making tools (Elbogen, 2002; Mulvey & Lidz, 1995). As Paper IV illustrates, clinical case management with boys presenting with antisocial behaviour can be complicated, with several arenas for the clinical team to master. The clinician handling complex cases like families with antisocial children might be in need of frequent supervision, education and time for evaluating work in order to enhance possibilities of correctly supporting these children.

A particular feature the teams discussed with possible relevance for understanding complications in clinical work was the feelings these children might trigger in people around them. This was found in parents being afraid of their children, not having the courage to provide boundaries, and in the clinicians' own experiences of meeting boys with aggressive behaviour. These aspects are seldom pointed out in the discussions of treatment of antisocial behaviour. Some of these children might be perceived as frightening, causing an ethical and organisational dilemma for the clinician regarding how to administer treatment.

Another recurring theme in the team discussions related to the dependence on other agencies. According to them, the complicated task of collaboration sometimes limited the ability to intervene with the boy's problems. This is not a new finding. The need for management plans across organisations has been forwarded earlier (Weist, Lowie, Flaherty, & Pruitt, 2001). When collaboration is unstructured, there may be a risk that the resources of the professional

teams might be inefficiently used, with the consequence that families are left without adequate support. The teams also described children and families that had been shuffled around within and among systems. Thus, despite the limitations provided by a qualitative study design, and despite the fact that some of the findings are not new, Paper IV highlights issues to be resolved to move from assessment to management and to supply families with antisocially behaving children with appropriate services.

GENERAL DISCUSSION

This study embarked on evaluating procedures for early identification of antisocial behaviour. At first, a short summary and reflections are given on some of the results. Thereafter, aspects pertaining to clinical work are considered and discussed further.

Summary and reflections on the usefulness of risk assessment and CU-traits approaches

Early identification procedures touch upon the delicate balance between discerning children at risk to prevent them and the environment from repeated violent and norm-breaking behaviours, and the danger of labelling effects. While acknowledging the relatively small clinical study-sample used in this thesis, which may limit advanced conclusions and generalizability of the study-findings, both the EARL-20B-based assessments and identification of CU-traits showed meaningful relationships with outcome.

First, the EARL-20B-derived measures were moderately associated with antisocial behaviour at the six- and thirty-month follow-ups (Paper I-II). Even though a small sample was used, the results should supplement the current knowledge base as few earlier studies have provided data on child risk assessment tools (Howell, 2001). Further, to my knowledge, no study on children with antisocial behaviour has simultaneously examined the significance and differential value of a structured assessment, baseline CD-diagnosis and (usual) unstructured clinical evaluations for predictions of risk within the same sample. One single study was found comparing the predictive value of a structured assessment by clinicians (Ferdinand et al., 2003). Here, clinician-reported observations/self-reports during a semi-structured clinical interview (The Semi-structured Clinical Interview for Children and Adolescents [SCICA; McConaughy & Achenbach, 1994) were compared to parent- and teacher-completed CBCL-ratings on predicting poor outcome such as outpatient/inpatient treatment, desire for help, disciplinary problems in school, or police contacts. The approaches were evaluated in a sample of 96 referred children aged 6-12 years at initial assessment, followed across 3.2 years. Clinician's ratings based on the interview made important contributions towards predicting parent-reported desire for help and inpatient treatment, but not independently to antisocial behaviour. The findings in this thesis suggest the usefulness of structured clinical interviews also for predicting antisocial behaviour, although this was evaluated in relation to DSM-IV CD and not to CBCL-ratings.

Recently, attempts to identify very young children at risk for future antisocial behaviour in the community, as opposed to in clinical settings, were undertaken to enable preventive interventions to targeted groups. A few research groups report data on the accuracy of screening methods to predict antisocial behaviour in community samples. Bennett and Offord (2001), by using two-year follow-up data from two representative cohorts of the Canadian National Longitudinal Survey of Children and Youth (aged 5-6, $n = 881$; aged 8-9, $n = 859$), showed that no predictor (externalising symptoms and/or risk factors) achieved their minimum criteria for sensitivity and PPV of at least 50%. These researchers stated that screening initiatives in the normal population by only assessing CD symptoms at a single point should be abandoned due to risk for misclassification (see also Bennett et al., 1998). Hill, Lochman, Coie, Greenberg and the conduct problems prevention research group (2004),

provided data on a single/multiple-rater and multiple-gating procedure within the Fast Track longitudinal sample of 396 first grade children from high-risk environments. The combined use of parent and teacher ratings was found to effectively predict externalising behaviour and delinquent outcomes in 4th and 5th grades. Parent- and teacher-rated behaviour problems in the 1st grade produced AUCs of the ROC of .90 for parent/teacher rated behaviour problems in 5th grade, .83 for self-reported delinquency, and .81 for DISC parent/child report of CD or ODD. These researchers indicated that early screening in targeted community samples could be justified, especially for ruling out future cases of behaviour disorders. The promising results await replication, but may represent future avenues for very early identification and preventive interventions.

Second, CU-traits, as defined by the APSD (Frick & Hare, 2001) (Paper III), proved useful for distinguishing a group of severely disordered conduct-problem children, even after controlling for AD/HD and number of CD/ODD symptoms. This replicates and extends the findings of Frick and colleagues (Frick & Ellis, 1999), and is, to my knowledge, the first study undertaken with a sample of clinic-referred boys outside the USA. Even though Frick et al. (2003) reported relatively high stability estimates (ICC = .93) of youth psychopathic traits over a period of 4 years, a limitation of current research is that no longer follow-ups exist to show that these children would meet adult definitions (Seagrave & Grisso, 2002). It should also be noted that there is no general consensus in developmental psychopathology that personality or personality disorders are crystallised before adulthood (Bernstein, Cohen, Velez, Schwab-Stone, 1993; Larsen & Buss, 2005). Legitimate concerns have been raised about describing personality features in childhood and applying the concept of psychopathic-like behaviour to children (for a discussion, see Seagrave & Grisso, 2002; Hart, Watt, & Vincent, 2002). However, recent reports support the investigation of self-reported personality traits in youths in the normal population (see Andershed, 2002; McCrae, et al., 2002; Roberts & Caspi, 2001; Roberts, Caspi, & Moffitt, 2001; Vizard, French, Hickey, & Bladon, 2004). Since little is known about the stability of personality traits in general, extending the concept of psychopathy to boys could be controversial. Even if more stable traits would exist in childhood, these could look different from those targeted in adulthood. That is, traits, such as empathic behaviour, may change across the lifespan with different manifestations in different ages, indicating so-called heterotypic continuity. It could thereby be difficult to use adult patterns as indicators of what to search for in childhood. Acknowledging these considerations, there are some indications that juvenile psychopathic-like behaviour measures "something", even if "it is impossible to be sure at this time they are actually measuring psychopathy" (Hart et al., 2002, p. 244). More data is needed before the concept is appropriate for widespread clinical use with boys. Although with limited generalisability due to the clinical and small sample, this study confirms the presence of behavioural and emotional patterns characterising a group of young boys with more severe antisocial behaviour (cf. Frick & Ellis, 1999).

Combined use of the two approaches
The current findings indicate a possible usefulness of both the EARL-20B and the APSD CU-traits. Further, tentative illustrations of combinations of high or low ratings on the EARL-20B and CU-traits suggested that an integrated use of both approaches might provide advantages for early identification (Paper III). If validated, a combination of the two aspects would fit well into the description by Loeber et al (2000) of the development of adult antisocial

behaviour. This model emphasises several levels of influencing primary risk factors both at the individual, family, and societal levels. When certain traits of personality are evident, such as CU-traits, this is suggested to affect the development of ODD/CD and subsequent antisocial personality disorder (APA, 1994). A combined use of both the EARL-20B and APSD, aimed at identifying CU-traits, would partly mirror the utilisation of the adult Psychopathy Checklist PCL-R (Hare, 1991), which is integrated as a part of the structured risk assessment tool HCR-20 (Webster et al., 1997) for improved identification of persons with a higher likelihood for future severe antisocial behaviour.

Employing structured approaches in mental health settings
If potentially valuable, how could approaches for an early identification of high-risk youth be employed in child mental health settings? First, it has been stated that when addressing either risk or CU-traits among children, the purpose should to be to prevent serious behaviours from occurring through providing treatment or interventions (Augimeri et al., 2001; Frick, 1998). Hart (1999) argued that the purpose of performing a risk assessment is to "speculate in an educated way about the violence that an individual might commit, and to identify what is required to stop such violence from occurring" (p. 487).

Second, the verbal communication could be of importance. Previous research with clinicians in adult mental health settings has shown appreciation when communicated evaluations of risk assessments were connected to risk factors rather than expressed as a percent figure representing probabilities of future behaviour. Evaluations were also more highly valued when addressing risk factors and management, particularly in high-risk cases (Heilbrun, O'Neill, Stevens, Strohman, Bowman, & Lo, 2004; Heilbrun, O'Neill, Strohman, Bowman, & Philipson, 2000). When considering and communicating risk assessments and CU-traits among children it could be important to both highlight the developmental aspects of childhood in terms of cognitive and emotional maturity, as well as focus on the prevalence of protective factors that might cancel out the future scenario. Perhaps the use of the term "personality" ought to be avoided during childhood. Reformulating "personality" into explicit age-appropriate descriptions of patterns of behaviour and emotional reactions might improve the ability to communicate about these features and enhance the possibility of following these aspects from childhood to adulthood.

Implications for treatment
Given the costs and suffering, it would be fair to say that the professional focus probably would benefit from a shift from "after the fact programs" to "early interventions" for children with antisocial behaviour. More accurate identification of children at risk could help clinicians plan and provide tailored, empirically supported interventions at an earlier age. Snyder (2001a) postulated that "Few other prospectively identified groups provide such an opportunity to reduce the overall level of crime in a community, to decrease the future expenditure of tax dollars, and to improve the overall well-being of youths in a community" (p. 41). Cohen (1998) estimated the monetary value to society of successfully diverting an individual with an early start and persistent antisocial behaviour in adulthood to be in the neighbourhood of US $2 million. These costs would be related to such expenses as incarceration, treatment, and victim losses. Nevertheless, as illustrated in this thesis, and noted by other researchers (e.g. Frick, 1998), children with antisocial behaviour constitute a

heterogeneous group, with possibly different treatment needs. Whereas parent management training is suggested treatment of choice for children below twelve years of age (Fonagy & Kurtz, 2002), and multi-component treatments involving the child, family and school seem especially effective, other specific aspects could be focused for various children to enhance treatment outcome. Identification of subgroups may be one way to enhance the understanding of causal processes and provide more effective, tailored treatments.

The EARL-20B

The EARL-20B provides a possibility to screen for and intervene with potentially important risk factors for antisocial behaviour. The dynamic and variable risk factors could be directed during treatment, aiming at modifying and reducing their possible impact on child behaviour. The EARL-20B cluster analysis was an attempt to provide an individualised approach to risk assessment devices by identifying more homogeneous subgroups with respect to presence/absence of risk factors and correlated aspects. For instance, children in cluster 2, were distinguished mainly by social risk factors, were rated as more proactively aggressive than were children in cluster 4 at baseline, whereas cluster-1 boys, were characterised by several risk factors/correlates, and associated with high levels of both reactive and proactive aggression. For children with antisocial behaviour, cognitive behavioural treatments such as social skills training and anger management have been suggested valuable (see Bloomquist & Schnell, 2002; Fonagy & Kurtz, 2002). Possibly, these or other treatments may need to be differently emphasized for children in various clusters and with diverse needs. However, the ability of the instrument to directly aid in treatment planning awaits evaluation.

Callous-unemotional traits

It is possible that for treatment to be effective in reducing conduct problems for boys high on CU-traits, the CU-traits themselves need to be targeted in treatment planning. Until now, most interventions that have been developed and evaluated for the treatment of conduct problems (e.g. parent management training, social skills training) have not discussed the potential moderating effects of CU-traits. Frick, Cornell, et al. (2003) suggested that CU-traits might represent a temperamental style, "low behavioural inhibition", associated with low emotional reactivity to aversive stimuli, characterised by under-reactivity in the autonomic nervous system and by low fearfulness to novel or threatening situations. This is proposed to impair the development of the affective components of conscience. Conduct-problem children without high levels of CU-traits are instead suggested to have problems with behavioural and emotional regulation, related to high levels of emotional reactivity (Frick, Cornell, et al., 2003). In one study (Wootton et al., 1997) it was reported that children high in CU-traits were less likely to come from families where ineffective parenting strategies are used, as opposed to children low on these traits. Children high in CU-traits exhibited conduct problems regardless of quality of parenting. This may suggest that these children are less responsive to parental discipline. Deficiencies in the expression of, and possibly processing of, affect might be a core aspect to focus on in treatment apart from the direct expression of antisocial behaviour. Furthermore, reward-oriented approaches to socialisation might be preferred over punishment-oriented formats due to the low emotional reactivity to aversive stimuli.

In the qualitative study (Paper IV), the boys' behaviour was sometimes described as evoking feelings of fear among caregivers, triggering anxiety and concern among both parents and clinicians and possibly leading to less ability to help the child. One could speculate whether

among those children who evoke fear among caregivers are children with an elevated number of risk factors and a propensity towards CU-traits. The emotional deficiencies characterised by CU-traits would probably be evident in interpersonal relationships such as with providers of care. Structured approaches could have a value in child psychiatric clinics by providing a focus on empirically researched aspects and contribute to reasoning about what causes the anxiety.

Situational factors
The global approaches investigated in this thesis do not directly inform on factors that may trigger antisocial behaviours. Neither do they describe exactly how behaviours and problems should be managed. In clinical practice, there are often several needs of the boy, other than the antisocial behaviour, that have to be considered simultaneously (Doyle & Dolan, 2002). Further, the causal models suggested to a family for the explanation of antisocial behaviour may differ among and within clinical teams, thus making the clinical situation complicated to deal with (Paper IV; Bartolo, 2001). When treating antisocial behaviour in children, behaviourally and cognitively based models such as parent management treatment (PMT) or social skills training have proven useful (Fonagy & Kurtz, 2002). These manuals were originally based on case formulation, the behavioural analyses of situations, such as in the use of ABC-models (Antecedents, Behaviour, Consequences) or cognitive analyses of the way of thinking in specific situations. It is possible that case formulation approaches may provide a framework for improved bridging between assessments and interventions (Doyle & Dolan, 2002; Nock, Goldman, Wang, & Albano, 2004). These analyses could complement the distal risk factors and be of value to evaluate in relation to assessment and treatment planning.

Clinical services for children with antisocial behaviour
Children with antisocial behaviour do not represent a new trend in society. Over several centuries, the understanding and treatment of children with delinquent behaviour has been debated within social, legal and medical contexts. Despite past substantial interest in antisocially behaving children, the distinction between what is "mad" and "bad" behaviour, whether to protect children or the society, to punish or to treat, as well as the role of law or medicine have not yet been settled in contemporary research and clinical perspectives. We are still debating who should take the main responsibility for change or intervention, and how treatment should be conducted. It is confusing that regardless of the multitude of research conducted over the years, we know too little about causality and moderating factors. We have found few means for providing a link between the bulk of research and clinical reality, and have not been able to provide services with organisational features optimal for identifying and supporting these children and their families (Ministry of Health and Social Affairs, 1998; National Board of Health and Welfare, 2004; Williams & Salmon, 2002).

Reports suggest that child mental health services are in major need of further development of care for children with antisocial behaviour (Ministry of Health and Social Affairs, 1998), possibly through implementation of evidence-based interventions. One important point from this thesis is if evidence-based care is possible without improved organisational features. As reported, a main concern among the clinicians (Paper IV) was who should be responsible for these children and their families. The clinical teams felt that children and their families were pushed among services instead of being provided with interventions (cf. National Board of

Health and Welfare, 2004). A worst-case scenario of the current state of affairs in services for these children and their families, borrowed from literature, might be depicted as follows.

"This is a story about four people named Everybody, Somebody, Anybody, and Nobody. There was an important job to be done and Everybody was sure that Somebody would do it. Anybody could have done it but Nobody did it. Somebody got angry about that because it was Everybody's job. Everybody thought Anybody could do it, but Nobody realised that Everybody wouldn't do it. It ended up that Everybody blamed Somebody when Nobody did what Anybody could have done."

<div align="right">Dishcloth Philosopher</div>

Like circumstances would probably affect clinician abilities to avail themselves of the existing body of knowledge and use structured evidence-based approaches and guidelines. Whereas good inter- and intra-agency collaboration has been described as essential for ensuring good services for many disorders (Weist, et al., 2001; Williams, Gilvarry, & Christian, 2004; Williams & Salmon, 2002), the opposite situation often seems to prevail within and among agencies managing children with antisocial behaviour. The need for management plans across organisations has been forwarded earlier (National Board of Health and Welfare, 2004; Weist et al., 2001). The use of structured assessments might be one approach for improved communication among services. Nevertheless, without improved organisational features, it does not seem likely that overall management for antisocial children and their families will progress substantially.

Limitations and strengths
The strengths of this thesis are the combined use of quantitative and qualitative methods and its clinical orientation. Assessment of risk and needs factors, individual characteristics, as well as procedures of clinical work were investigated with the purpose of providing a link between research findings and the clinical context. Previous research has indicated a gap between these aspects and clinical practice. The longitudinal study-design with clinical research-interviews with parents at different clinics and at two follow-ups, the last including two various respondents (parents and teachers), is also a strength of the project. This provided an opportunity to follow families over a period of approximately thirty months and evaluate outcomes prospectively rather than retrospectively. To my knowledge, the predictive, prospectively measured validity of a risk assessment tool for boys under age 13 has never been presented together with a naturalistic way of capturing clinical evaluations of risk. The children were referred to clinical settings in mid-Sweden, and seem comparable to other clinical groups previously described in research, even though a rather high non-participation rate should be noted (39%). The choice of focusing on clinically referred boys has the limitation that the results cannot be generalised to non-referred populations of children this age, and neither to clinically referred girls. On the other hand, the aim was to focus on clinical work with antisocial children. Also, one of the tools investigated (EARL-20B) was composed for use with boys by clinical or nursing professionals. A later developed tool for use with girls, the EARL-21G (Levene et al., 2001) was not available at the time of the study. Another limitation concerns the small study sample, which limited the possibility of comparing groups within the data. Therefore, the risk for Type I versus Type II errors had to be carefully handled. Fortunately, the attrition rate was low at each follow-up leading to essentially no further reductions in power.

The use of parent and teacher ratings might be considered to yield less salient indications of antisocial behaviour than official records or self-reports. However, in the present age-group few individuals are in conflict with the law, and parents have been found to provide a better estimate of child antisocial behaviour than the child himself (as opposed to affective symptoms) (Loeber et al., 1991). Furthermore, several aspects of antisocial behaviour were investigated, such as aggressive behaviour, delinquent behaviour, and clinical symptoms, which should provide more comprehensive descriptions of child disruptive behaviour. The use of parents as informants in the interview and as raters of child problems according to written questionnaires could have inflated the correlations between researcher ratings of risk, and parent ratings of child antisocial behaviour. However, aggressive or antisocial behaviour was only a small part of the interview with caregivers. The EARL-20B assessment is to be based on all information attainable, and on the total situation of the family including social factors and various child attributes. Furthermore, only child behavioural observations would have provided an independent measure of behaviour, which was not possible to obtain in the current multi-centre project.

The qualitative study contributed a clinical perspective on professional work with these boys, and presented some of the hindrance to the bridging between research and the everyday clinical context. The degree to which the findings of this study can be generalised to other professional settings may be limited due to the qualitative, non-experimental design and to cultural differences between countries or settings. The study was based on post-event reflections on previous work efforts, and we do not know to what extent the narrations of the teams reflect what actually happened. This naturally differs from data obtained through observing real work processes, which limits the ability to generalise the conclusions. However, the findings are in line with other reports of the clinical reality (e.g. National Board of Health and Welfare, 2004). Therefore the findings may be viewed as suggestions of aspects that need to be targeted to improve assessment and management of boys with antisocial behaviour.

Future directions
This thesis mainly focused on assessment and sub-typing approaches of antisocial behaviour among referred boys between the ages of 6 and 12. Due to the multitude of aspects in this field, more combined efforts by research groups, such as those by the Study Group on Very Young Offenders (see Loeber and Farrington, 2001), would be needed to enable comparisons between studies, provide a focus on girls, and facilitate for study outcomes to be comprehensive and possibly lead to changes in clinical reality.

To move from the mere identification of risk indicators to understanding epidemiological features and create specific hypotheses on the mechanisms involved in risk mediation, there is a need to find more generally accepted definitions and assessment methods of antisocial behaviour. Equally, the specific processes behind antisocial behaviours would need to be delineated. Research suggests that behavioural and temperamental patterns of antisocial behaviour can be found as early as the age of three years (Caspi, Henry, McGee, Moffitt, & Silva, 1995; Caspi et al., 1996). A future research avenue may therefore be to investigate clearly defined antisocial features and examine risk assessment or CU-traits aspects among

even younger children than those focused in this thesis, and include girls. Further, to enable early, targeted and preventive treatments, the promising strategies of single/multiple-rater and multiple-gating procedure evaluated for 1st graders within school settings could also be of value to investigate further (Hill et al., 2004). Future experimental studies regarding the usefulness of the risk assessment approach and the identification of the CU-dimension in children relative to treatment planning and outcome could be of importance and reveal clinically useful information.

Exploring ways to organise comprehensive and effective services for these children and their families seems to be of at least as much importance to investigate further as that of finding new assessment and treatment strategies. Hopefully, the time will soon be ripe for developing and evaluating more harmonised care for these children and their families. Figure 7 attempts to summarise, contextualise and suggest some future lines of research of aspects referred to in this thesis.

Figure 7. From assessment to management of antisocially behaving boys.
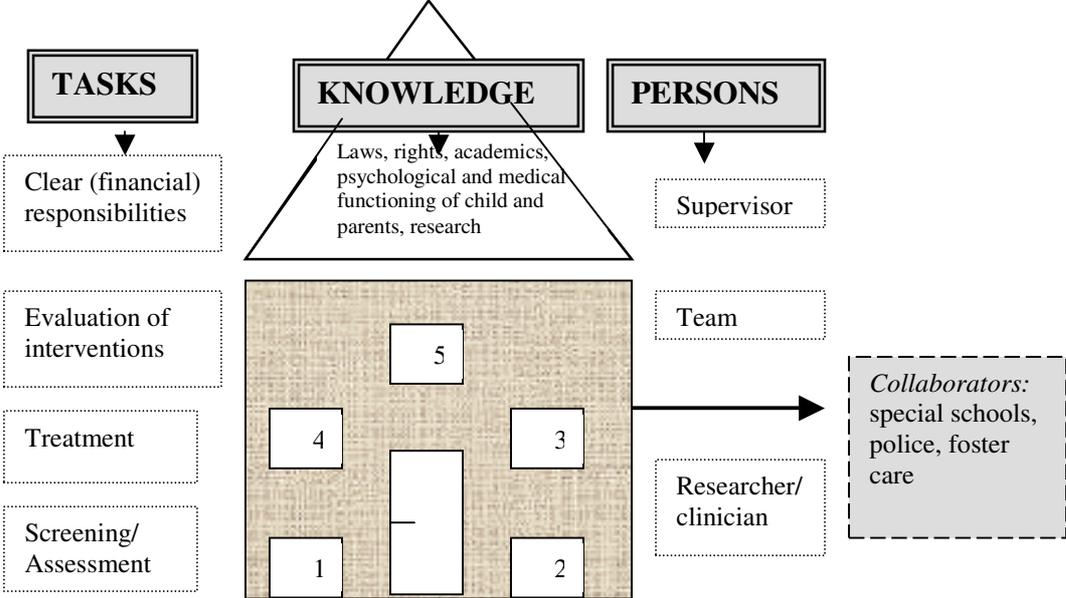
Note: 1: Assessment including risk assessment, CU-traits, co-morbidity; 2: Deepened situational analysis, e.g. through observations of behaviour or ratings; 3: 4: 5: Different levels of treatments such as standard, intensive, foster care.

The picture of a house is chosen to illustrate the perceived need for comprehensive and combined efforts, and the call for investigations of effective organisations. Due to the heterotypic and complex character of antisocial behaviour there seems to be a need for multidisciplinary knowledge to deal efficiently with assessment and treatment. How could people with different professional educations and trainings, such as social workers, child/adult psychologists and psychiatrists, police officers, and school personnel be organised to allow for effective cooperation and care? Further, because of the lack of bridging between researched and clinical knowledge; would there be an advantage with teams composed of both clinicians and researchers, or how should collaboration be achieved? An interesting approach in the literature is the clinician described as a scientist practitioner (see Hayes, Barlow, &

Nelson-Gray, 1999). In this line of research, research opportunities have been connected more tightly to clinical practices, both enriching them and facilitating clinical use of research findings, which could make it a valuable approach to investigate in relation to antisocial behaviour. Risk assessments and evaluations of CU-traits are suggested as valuable for identifying children with more needs (indicated by 1 in Figure 7). Could situational (ABC) and systemic analyses (indicated by 2), complete these more global assessments and enable a bridge to management and treatment? Evidence-based treatments such as PMT suggest that situational aspects could be valuable to consider for improved outcome.

In recent times, a sub-speciality within child psychiatry has been advanced, often called child forensic psychiatry (e.g. Haller, 2002). "Forensic" is defined as a branch of psychiatry connected with courts of law. The first recognised interface between law and children was the subject of child abuse and neglect, and later in the area of criminal law when juveniles were given certain rights. Even though most young children do not break the law, some commit delinquent acts and are at risk for future antisocial behaviour. Would there be an advantage to combine efforts into a forensic psychiatry for children at risk for antisocial behaviour, to enable deepened knowledge on antisocial behaviour, paralleling the organisation in adult psychiatry and adult forensic psychiatry? This could be a question for future research to further investigate.

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