chapter 7
Summary and general discussion
SUMMARY

The objective of this study was to investigate prevalence rates and correlates of psychopathology (including aggression and previous trauma) and sexual risk behavior in detained girls. Research on this topic is warranted; in the past few decades girls’ aggressive behavior has increased dramatically in a number of western countries such as the US and the Netherlands (CBS, 2006; OJJP, 2003; Snyder & Sickmund, 2006). The number of detained girls has increased in parallel, with severe consequences from a public health point of view. High prevalence rates of psychopathology (including trauma) and sexual risk behavior have been demonstrated in this group (Cauffman, Feldman, Waterman, & Steiner, 1998; Crosby, Salazar, DiClemente, Yarber, Caliendo, & Staples-Horne, 2004; Teplin, Abram, McClelland, Dulcan, & Mericle, 2002; Vermeiren, Jespers, & Moffitt 2006). For this reason, it is no surprise that antisocial girls carry negative outcomes in adulthood (Lanctot & Leblanc, 2002; Moffitt, Caspi, Rutter, & Silva, 2001; Pajer, 1998). Unfortunately, surprisingly little is known of the factors that predict outcome in this group (Pajer, 1998; Vermeiren, 2003). Therefore, studies that focus on relevant factors such as psychopathology and sexual risk behavior are needed. Further insight into the role of these characteristics may be of help in guiding intervention and treatment, finally resulting in a better outcome for these girls and in increased safety for society.

Further research on the development and course of antisocial behavior in girls is also necessary, as research on this topic is not only scarce but also inconsistent. While the course and development of antisocial behavior in girls may be different from boys, it is known that antisocial behavior tends to peak in adolescence for both sexes (Junger-Tas, Terlouw, & Klein, 1994; Moffitt, 1993; Moffitt, Caspi, Rutter, & Silva, 2001). The taxonomic model of Moffitt (1993) defines two distinct pathways to explain the development of antisocial behavior: a life-course persistent (LCP) and an adolescent limited (AL) developmental pathway. Antisocial girls appear to show many of the correlates that have been associated with the LCP pathway in boys, and they
tend to show impaired adult adjustment, which is also similar to boys in the LCP pathway. However, Moffitt et al. (2001) demonstrated that almost all girls who engage in antisocial behavior best fit the AL type, and Silverthorn and Frick proposed a delayed onset pathway for girls. In the delayed onset pathway, factors typically seen in the LCP male group are apparent, such as cognitive and neuropsychological deficits, a dysfunctional family environment, and/or the presence of a callous and unemotional interpersonal style, although the manifestation of antisocial behavior does not occur until adolescence. Further investigation of this topic is warranted.

In addition to gender differences in developmental pathways towards antisocial behavior and in prevalence rates of specific conditions, relationships between risk factors may also be gender specific. In several studies, risk factors for aggression or conduct problems differed for girls compared to boys (Ehrensaft, 2005; Keenan, Loeber, & Green, 1999; Moffitt et al., 2001; Odgers & Moretti, 2002). While rates of disruptive behavior are lower in clinically referred girls than in clinically referred boys, girls with disruptive behavior show higher levels of comorbid psychopathology than boys with disruptive behavior (Eme, 1992), a phenomenon that was labeled the gender paradox (Loeber & Keenan, 1994). Disorders such as attention deficit hyperactivity disorder (ADHD), anxiety disorder (particularly post-traumatic stress disorder), depression, substance use, and suicidality have more often been reported in disruptive girls than boys (Chamberlain & Reid, 1994; Keenan et al., 1999; Loeber & Keenan, 1994; Teplin et al., 2002). Also, although traumatization predicts criminal offending in both sexes (Baldry, 2003; Becker & McCloskey, 2002; Flannery, Singer, & Wester, 2001; Moffitt et al., 2001), a higher violent offense arrest rate was found for girls than for boys in the aftermath of child physical abuse (Herrera & McCloskey, 2001). Another gender difference may relate to the type of aggression. While the subtype of overt aggression dominates in boys, covert aggression may often be very relevant when investigating girls’ aggression. The relevance of this specific female subtype of aggression should not be overlooked, as previous research has found that covert aggression causes serious psychosocial problems, such
as peer rejection, loneliness, and depression in both the victims and the relationally aggressive girls themselves (Crick & Grotpreer, 1995; Crick & Bigbee, 1998). Finally, the role of sexual behavior should be given attention, as sexual promiscuity, sexual precocity, and teenage pregnancy have been shown to be related to CD and delinquency in girls (Devine, Long, & Forehand, 1993; Kovacs, Krol, & Voti, 1994; Underwood, Kupersmidt, & Coie, 1996; Zoccolillo & Rogers, 1991).

Also, we were interested to ascertain whether previous findings usually from studies in the US and Australia, were generalizable to detained girls in the Netherlands or in Belgium. Among all these countries, justice and health care systems are known to vary widely. Therefore, Dutch and Belgian samples of detained girls may well be different from US or Australian samples, where juveniles can only be detained under a criminal law measure. In contrast, in the Netherlands juveniles can also be detained under a civil law measure, which is imposed for reasons of protection in cases of problem behavior such as drug abuse, prostitution, or runaway behavior. In Belgium, all youths are detained under a civil law measure, as criminal law is not applied to minors. For a number of methodological reasons, a strict comparison of findings between our studies and previous studies is not possible. However, by studying comparable concepts and relationships in similar samples across countries, possible mechanisms and directions of future research may be deduced.

For these reasons, the overall aim of this thesis was to investigate aggression, psychopathology and sexual risk behavior in representative samples of detained adolescent girls, and to study the relationships between risk factors and levels of psychopathology. These topics were investigated in two representative samples of detained girls aged 12 to 18 years: one sample of girls admitted to a juvenile justice institution (JJI) in the Netherlands and one sample of detained girls (and a matched school-based sample of general population girls) in Belgium.
In chapter two the prevalence rates of psychopathology and aggression were assessed in a representative sample of detained female adolescents in the Netherlands on admission to a juvenile justice institution (JJI), and relations between psychopathology and aggression severity were investigated. Three aggression subgroups were formed based on the number of aggressive items reported in the CD section of a semi-structured psychiatric interview, the Kiddie SADS (non aggressive, mildly aggressive and severely aggressive). High prevalence rates of internalizing and externalizing psychopathology and aggression were found, comparable to previous findings in North American and Australian samples. In addition, prevalence rates of psychopathology were found to differ substantially between aggression subgroups. Externalizing psychopathology (ADHD, ODD, CD, substance use disorders), PTSS, and suicidality were lowest in the non-aggressive group, intermediate in the mildly aggressive group, and highest in the severely aggressive group. These findings indicate that screening of both psychopathology and aggression on admission to JJIs is important, as both psychopathology and aggression are highly prevalent, but also because they are associated with each other, which may negatively affect an individual’s condition.

Because psychopathology such as PTSS and aggression are highly prevalent in detained adolescents, and because previous research has indicated positive relationships between trauma-related characteristics and aggression, this relationship was examined in specific. Chapter three reported on the prevalence of trauma in this sample, as well as the relationship between trauma and aggression. Not only overt aggression, but also covert aggression was taken into account, as covert aggression has been described as a specific female subtype of aggression (Crick & Grotpeter, 1995; Sterman et al., 1998). Also, substance use disorders were investigated as possible mediators in this relationship. Approximately 85% of the participants reported a history of at least one trauma, which was related to both subtypes of aggression. Interestingly, the relation with covert aggression was particularly strong. In contrast to expectations, substance use disorders had no mediating effect on these relations. These findings once more emphasize the necessity to
investigate detained girls at admission for both trauma and aggression, and to consider the importance of both conditions being related. With regard to aggression subtypes, the subtype of covert aggression should also be taken into account when investigating detained girls.

Because in previous research high prevalence rates of sexual risk behavior and teenage pregnancy were reported, this issue was another focus of our study. In chapter four, the lifetime prevalence rate of teenage pregnancies was investigated, as well as the relationship between pregnancy and characteristics related to mental health and sexuality. Approximately 20% of the participants reported having been pregnant (before detention), although none had actually given birth. Not surprisingly, sexual risk behaviors (such as no condom use, no use of other forms of contraception, substance use at intercourse, and sexually transmitted diseases) were more prevalent in the pregnancy group. In addition, mental health characteristics such as suicidality predicted pregnancy, indicating that prevention of teenage pregnancy in this group should not only focus on safer sex, but possibly also on psychopathology.

In chapter five, the issue of sexual risk behavior and mental health was investigated in a sample of detained female adolescents in Belgium. In addition to prevalence rates of sexual risk behavior, relationships between sexual risk behavior and both sociodemographic and mental health characteristics were investigated. The investigation of a school-based group with the same instrument allowed comparison with a general population group. Both groups were divided into a sexual risk (SR) group and a non sexual risk (NSR) group. Not surprisingly, prevalence rates of sexual risk behavior were much higher in detained (56.4%) than general population girls (9.6%). Also, while general population SR girls differed from NSR girls with respect to both internalizing and externalizing psychopathology, only externalizing psychopathology was related to SR in the detained group. These findings indicate that intervention programs that target sexual risk behavior are warranted during detention. Such programs should also consider mental health, and should be specifically tailored for detention groups.
Finally, in chapter six, differences between girls detained under a civil law measure and girls detained under a criminal law measure in the Netherlands were investigated, comparing their offense history, sociodemographic characteristics, treatment history, psychopathology and trauma. Girls were most often (82%) placed under a civil law measure. In both groups, high prevalence rates of psychopathology and trauma were found. The group detained under criminal law more often had a history of violent offenses, and more often had a non-Dutch background, while a history of residential placements, oppositional defiant disorder (ODD), suicidality and self-harm was more prevalent in the civil group. These findings indicate that both groups carry substantial treatment needs. Therefore, it may be advisable to base grouping of girls on treatment needs, as opposed to the current grouping based on judicial measure.

**GENERAL DISCUSSION**

The results presented in this thesis expand upon the literature on detained girls in several ways. The prevalence rates of psychiatric disorders and sexual risk behavior were alarmingly high, which is in line with findings in North American and Australian studies (Canterbury et al., 1995; Cauffman et al., 1998; Crosby et al., 2004; Dixon et al., 2004; Teplin et al., 2002). These findings demonstrate that, although prevalence rates of specific disorders may vary across different studies and across different countries, detained girls generally present with severe psychiatric problems, and are in substantial need of treatment.

With respect to developmental pathways of antisocial behavior (Moffitt et al., 2001; Silverthorn & Frick, 1999), some conclusions can be drawn. Because our study was cross-sectional, a discussion on pathways should be considered speculative and be evaluated with caution. At present, we cannot predict how the participants will develop in adulthood on the basis of our findings. Also, information on onset, development and course of their prob-
lem behavior prior to detention was derived retrospectively. From previous studies (Vermeiren, 2003), it is known that self-report information on early behavior problems may not be completely reliable. Despite the limitations of our design, the high prevalence rates of trauma reported to have occurred even at an early age indicate that a dysfunctional family environment was present for the majority of girls participating in this study. In addition, many girls had a history of prior treatment or prior residential care before detention, showing that at least a subgroup of girls with later behavior problems had an early onset of a variety of problems. Although it is not known whether these problems were in the internalizing or the externalizing domain, one may wonder whether the type of problems carries relevance in girls. Because heterotypic continuity characterizes the development of problem behavior in girls, internalizing problems early in life may well be considered as important as externalizing problems to decide whether a life-course persistent path will develop. This would be in line with Costello et al. (2003), who demonstrated that continuity from one diagnosis to another (heterotypic continuity) occurred more often in girls than in boys. Of course, this hypothesis can only be tested by means of a longitudinal follow-up study.

The gender paradox postulates that antisocial behavior has much lower prevalence rates in girls than in boys, while higher rates of comorbid psychopathology are found in girls than in boys (Eme, 1992; Loeber & Keenan, 1994). As we did not investigate boys, we cannot conclude from our findings whether the gender paradox applies to our group as well. However, a positive relationship was found between aggressive behavior and psychopathology. Not only externalizing psychopathology, such as ADHD, ODD, CD and substance use disorders, but also internalizing psychopathology, such as PTSS and suicidality, was higher in girls with higher levels of aggression (chapter two).

High rates of externalizing disorders were reported by both the girls themselves and their parents. Parents reported generally higher levels of externalizing disorders (ADHD, ODD and CD) than the participants themselves.
In samples of male delinquents, the issue of cross-informant reliability has been studied as well, showing substantial differences between adolescents and parents (Colins, Vermeiren, Schuyten, Broekaert, & Soyez, 2008). Inter-rater disagreement may be of clinical relevance, as previous research in non-delinquent groups has demonstrated disagreement between parents and adolescents to be predictive of poorer outcome (Ferdinand, van der Ende, & Verhulst, 2006). It also has to be taken into account that, in delinquent groups, parental as well as participant information may have suffered substantial biases. While participant bias may be related to the situation of detention, denial, or distrust, parental bias may result from a lack of reliable information due to an enduring separation of parents and children, or the consequences of a long history of severe problems. Therefore, recall bias may have influenced parental reporting, resulting in either over-reporting or under-reporting of disruptive behavior disorders.

Sex differences in rates of conduct disorder may at least partly be explained by qualitative differences in presentation, characterized by a boy’s tendency towards greater use of physical (overt) aggression, and a girl’s tendency to exhibit covert aggression (such as verbal rejection, negative facial expressions, circulating rumors, and manipulating social networks) as their way to express anger or inflict harm (Crick & Grotpreter, 1995). A recent study by our research group in moderately delinquent boys referred to a delinquency diversion program, has indeed shown that overt aggression is higher than covert aggression (Popma et al., 2007). However, as girls were not included in this study, cross-gender comparison was not possible. Several studies within community samples have shown that the covert aggression subtype is more common among girls than boys, particularly in adolescents (Björkqvist, Lagerspetz, & Kaukiainen, 1992; Lagerspetz, Björkqvist, & Peltonen, 1988). Not only is covert aggression found to be more prevalent in girls, the consequences of being a victim of covert aggression is also perceived more distressing by girls than by boys (Crick, 1995). Our findings extend these findings to the specific group of detained girls, indicating that the subtype of covert aggression should be taken into account when clinically investigating...
this subgroup. Because our study was cross-sectional, it is not known whether this type of aggression carries predictive validity, an aspect that needs attention in future studies.

Teenage pregnancy and sexual risk behavior were shown to go hand in hand with multiple psychiatric problems, such as suicidality and externalizing psychopathology. The high rates of sexual risk behavior and teenage pregnancy in detained girls were alarming, which may indicate the likelihood of teenage motherhood after release. Because of the multiple problems these girls carry, they are likely to have deficits in parenting, and this may result in a transgenerational transmission of problems (Chamberlain & Moore, 2002). Not surprisingly, comparison of the two Belgian samples, the detained and school-based sample, showed that levels of sexual risk behavior and psychopathology were much higher in the detained group. In the school-based sample, externalizing as well as internalizing psychopathology predicted sexual risk behavior, while this was only so for externalizing behavior (delinquency) in the detained group. In the detained group, a ceiling effect may have influenced the results, as rates of specific psychopathological characteristics were very high. However, further study at this point is warranted, as this finding may indicate different treatment needs for these groups. Interestingly, in the Dutch sample, apart from age, early maturity and sexual risk behavior, an internalizing variable (suicidality) was of predictive value for teenage pregnancy. Suicidality was not investigated in the Belgian group, so we do not know whether this plays a role. Because different instruments were used in the Dutch and Belgian samples, findings of the two studies are not comparable.

Finally, our results showed that both girls placed under a civil law measure and girls placed under a criminal law measure, have high treatment needs. Although differences between these groups should not be ignored, the similarities between them in levels of psychopathology are striking. Therefore, it could be argued that grouping in juvenile institutions should be based on treatment needs, as opposed to the current grouping based on judicial measure, which is supported by policymakers.
Although this study has contributed to a better understanding of detained girls, a number of limitations should be taken into account when interpreting findings. In addition to those previously mentioned, a main shortcoming was the almost unique use of self-report information. In the Dutch sample, the psychiatric investigation was carried out by means of a semi structured psychiatric interview (Kiddie SADS, present and lifetime version) in combination with self-report questionnaires (Beck Depression Inventory, CPTSD Reaction Index, Dissociation Questionnaire, Trauma Questionnaire, Buss-Durkee Hostility Inventory, Social and Health Assessment). For reasons of time constraints and feasibility, reliable and validated self-report questionnaires were chosen for measuring internalizing psychopathology. Although this may have hampered reliability, it has previously been shown that adolescents themselves are reliable informants on essential variables such as antisocial behavior (Junger-Tas, 1994).

Only a sub sample of 73 parents could be included, which does not allow us to state that this group is representative for the complete sample. File information was also used as a source of collateral information, although this appeared to be of limited value, because of the lack of standardization and incompleteness of the files. Not only with a view to future research but also for clinical purposes, a standardized method of collecting collateral information should be developed. Furthermore, as our study was cross-sectional, suggestions about relationships cannot be given a time-related dimension. No firm conclusions can be drawn on the onset or developmental course of the problem behaviors (Moffitt, 1993; Moffitt et al., 2001; Silverthorn & Frick, 1999), as we do not know to what extent historical information is reliable. Moreover, this project did not focus on the outcomes of the girls, so we are not able to report on the predictive validity of specific variables.

Finally, our findings cannot be generalized towards all girls with conduct problems or non-detained delinquent girls, or to similar populations in other countries. As stated before, the country-specific policies with regard to handling delinquent and mentally disordered youth may have had substantial impact on the selection of this specific population. However, as a number of our findings are in line with previous studies in other countries, they seem to
Because high prevalence rates of psychopathology (including trauma and aggression) and sexual risk behavior were found in this group of detained girls, it may be considered imperative to develop intervention and treatment programs addressing these issues. The severity and complexity of the mental health problems in this group emphasize the need of psychiatric screening at admission. This screening, and further diagnostic assessments, should be carried out on an individual basis and be comprehensive, including disorders both in the internalizing and the externalizing domains. In addition, the history of trauma and subtypes of aggression should be investigated, as our study indicates that the covert subtype of aggression may be as relevant as the overt subtype in detained girls. Because detained girls have severe psychiatric problems and are also likely to continue having mental problems after release, involvement of local psychiatric health care institutions may be a necessity and crucial for providing continued care. The complexity of problems demonstrated in detained girls, and the differences from detained boys, favor developing specific gender-specific treatment programs. For example, attention should be given to the consequences of trauma, or the specific relationship of trauma with a qualitatively different type of aggression. Finally, attention should be given to specific risk behaviors, in particular in the sexual domain, in order to prevent teenage motherhood and the risk of transgenerational transmission of problem behavior.

In order to develop new and adequate treatment modalities, more extensive knowledge and insights should be gained about the specific group of girls in detention. There should be a focus on the long-term outcome of the girls regarding psychopathology, aggressive behavior, teenage pregnancy (and teenage motherhood), but of course, with respect to functioning in the familial, educational, professional, and personal domains. Also, the predictive value of risk factors as assessed in this study should be investigated. Given the high pregnancy rates and high risk of teenage motherhood in this group, future motherhood should receive attention as well. Premature motherhood
of this group may have severe consequences for parenting skills, and hence the development of their children. Aspects related to the outcome of these girls can be investigated by investigating the Dutch sample included in this study. All participants have given consent to such a follow-up study, which is currently ongoing. As participants in the Belgian study were included anonymously, follow-up is not possible.

With regard to intervention, results from our study show that treatment should focus on psychopathology as well as risk behavior. Such treatment should be evaluated on effectiveness (e.g. interventions for specific disorders such as ADHD or PTSD, psychotherapeutic interventions for trauma, and programs for prevention of sexual risk behavior), and long term consequences (general functioning, criminal recidivism).