Risk and needs assessment for juvenile delinquents

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Chapter 3

3

Risk assessment of girls: Are there any sex differences in risk factors for re-offending and in risk profiles?

Abstract

The aims of this study were (a) to investigate sex differences in risk factors for re-offending and (b) to provide a risk assessment model for girls. The data of 1,396 adolescents who committed a criminal offense were examined. Both generic and sex-specific risk factors for re-offending were found. The girl-specific risk factors are located mainly in the family domain. These girl-specific risk factors turn out to be by far the most important predictors for re-offending for girls. The risk assessment model divides girls into four different risk groups: a low risk group (containing 65% of the girls) and three high risk groups (girls with delinquent parents, victims of abuse, and repeat offenders), each showing a specific set of risk factors, which suggests the need for specific interventions.

3.1 Introduction

The number of girls that come into contact with the juvenile justice system has not only increased in the last couple of years but has also increased more dramatically than the number of boys with such contacts (Henington, Hughes, Cavell, & Thompson, 1998; Hipwell & Loeber, 2006; Siegel & Senna, 2000; Stahl, 1999; Steffensmeier, Schwartz, Zhong, & Ackerman, 2005). Since the 1980s, there has been a 29% increase in female juvenile offenses (Snyder & Sickmund, 2006). Because of the rising number of girls who offend, the assessment of their risk of re-offending becomes increasingly important to ensure proper treatment for this juvenile population. In the present study, we investigated whether risk factors for re-offending differ for boys and girls and whether risk assessment for boys and girls can be conducted in the same way.

Risk assessment instruments generally provide insight in the level of the risk of re-offending and in risk factors that determine that level, with the goal of preventing future offending. Most risk assessment instruments contain static and dynamic risk factors. Static risk factors are circumstances or conditions in a youth's life that cannot be changed, such as age of first offense. Dynamic risk factors, on the other hand, are circumstances or conditions in a youth's life that can potentially be changed, such as friends or school performance. By assessing both static and dynamic risk factors, insight is acquired not only in the level of risk but also in the possibilities to reduce it. In other words, identification of the dynamic risk factors that affect recidivism can lead to intervention programs that are better able to address juvenile needs (Benda, Flynn, & Toombs, 2001).

Risk assessment, combining static and dynamic risk factors, complies with two important "what works principles": the risk principle and the needs principle (Andrews, Bonta, & Hoge, 1990; Andrews & Dowden, 1999; McGuire, 1995). The risk principle implies that the intensity of an intervention should adequately match the risk of re-offending to be effective, meaning adolescents with a low risk of recidivism should receive little to no treatment, whereas adolescents with a high risk should receive intensive treatment (Andrews, 1995; Andrews et al., 1990; Lowenkamp & Latessa, 2005). The needs principle implies that treatment should address the dynamic risk factors (criminogenic needs) to be effective in reducing recidivism. The risk principle describes who should be treated (the offenders with a higher risk), whereas the need principle describes what should be treated.

In general, recidivism risk is estimated by means of generic risk assessment instruments, which have been constructed and validated mainly on male samples (Emeka & Sorensen, 2009). Because girls make up only a small percentage of juvenile offenders, risk factors that may be most important for female offending are not identified and incorporated in commonly available risk assessment instruments (Emeka &

Sorensen, 2009). In recent years, there is a growing awareness that risk factors of girls differ from those of boys, and therefore, it seems likely that generic risk assessment instruments predict recidivism in girls less adequately than they do in boys (Funk, 1999; Schwalbe, Fraser, Day, & Cooley, 2006). Although little research has been conducted to the extent to which generic risk assessment instruments adequately predict recidivism among girls, it has been demonstrated that the prediction made by means of a generic instrument worked quite efficiently for boys but provided only marginal improvement over chance prediction of recidivism for girls (Emeka & Sorenson, 2009).

The generic risk factors for recidivism among adolescents have been the subject of extensive research. Emeka and Sorensen (2009) have provided an overview of the various risk factors that have been found in previous studies. On the basis of this overview, risk factors can be divided into three domains: (a) criminal domain (e.g., age at first offense, offense history, and offense type); (b) individual domain (e.g., age, substance abuse, and mental health problems); and (c) social domain (e.g., deviant friends, out-of-home-placements, and problems in the home situation). To what extent these risk factors are important for both boys and girls has hardly been investigated so far. Risk factors for girls have been investigated, however, in general populations, but such studies have focused on the differences between delinquent and nondelinquent girls instead of the differences between re-offending and non-reoffending girls in delinquent populations. The most important finding of these studies in general populations is that risk factors that are important for delinquency in boys are also important for delinquent behavior in girls but that boys are generally exposed to a larger number of risk factors than girls (Fagan, Van Horn, Hawkins, & Arthur, 2007; Megens & Day, 2007; Moffitt, Caspi, Rutter, & Silva, 2001; Simourd & Andrews, 1994; Smith & Waterman, 2006; Van der Laan & Blom, 2006).

In addition, the differences in the extent to which risk factors occur among delinquent boys and girls (clinical sample surveys) have been examined. In most of these studies, sex-specific risk factors are found (Bloom, Owens, Deschenes, & Rosenbaum 2002; Hamerlynck, 2008; Hipwell & Loeber, 2006; Loeber & Keenan, 1994; McCabe, Lansing, Garland, & Hough, 2002; Vermeiren, Jespers, & Moffitt, 2006; Zahn, 2009). Despite a lower prevalence of antisocial behavior among girls, research has shown that girls display more severe problems than boys, which has been designated as the "gender paradox" (Hipwell & Loeber, 2006; Loeber & Keenan, 1994). Comorbidity is more common in girls than in boys in residential institutions: In addition to antisocial behavior, girls often display internalizing problems such as anxiety, depression, and suicidal tendencies (Belknap & Holsinger, 2006; Hipwell & Loeber, 2006; McCabe et al., 2002).

Besides differences in the intensity of problems, previous research implies that certain risk factors occur more often in the case of delinquent girls than in that of delin-

quent boys. Girls, for instance, have to deal with child abuse, particularly sexual abuse, more often than boys. Research conducted by Hipwell and Loeber (2006) showed that 70% of female delinquents have experienced some form of sexual abuse. In addition, girls often experience an accumulation of risks emanating from their home situation such as family conflicts, parents with an addiction, neglect by parents, out-of-home placement, antisocial behavior of family members and abuse (McCabe et al., 2002; Schwalbe et al., 2006).

Thus, previous research revealed that sex-differences exist in risk factors of delinquent behavior. The present study examines to what extent risk factors for recidivism differ between boys and girls. This knowledge is crucial to conduct adequate risk assessment in girls. In addition, we developed a risk assessment model for girls to gain deeper insight in the risk profiles of girls.

3.2 Method

3.2.1   Subjects
The sample includes 1,396 adolescents—1,156 boys (83%) and 240 girls (17%)–in the age range of 12 to 18 years who have committed a criminal offense and who have been referred to the Council of Child Care and Protection. The Council of Child Care and Protection examines whether the committed offense signals underlying disorders or problems in the adolescent's circumstances and gives advice to judicial authorities as to what penalty to impose. The random sample was taken as follows: First, five large branches of the Child Protection Board were selected. Subsequently, a random sample survey was drawn from each branch from the total adolescents reported to the branch in question in 2005. A comparison of the sample with the population showed that the ratio of boys to girls in the sample matched the ratio of boys to girls in the population from which the sample was drawn (boys, 82%; girls, 18%). Although the sample size of the girls is relatively small, the statistical power to detect a medium-sized effect with a sample size of $n = 240$ is 97% and should be considered adequate (Cohen, 1988).

3.2.2.   Instruments
Washington State Juvenile Court Pre-Screen Assessment (WSJCPA). The WSJCPA is a risk assessment instrument, developed and validated in the United States, which estimates the risk of recidivism among juvenile delinquents based on the most important predictors from the criminal and social domain (Barnoski, 2004a). For this study a Dutch translation of the WSJCPA has been used, which was slightly adapted for use in The Netherlands (Van der Put et al., 2009). Items from the criminal domain

concern age at first judicial contact, prior judicial contact, prior community service, prior detention, prior violence offense, prior offense against property, and seriousness and type of the current offense. Items from the social domain items pertain to problems concerning friends (association with deviant friends, such as friends who have had contact with the police before), use of free time (lack of occupation during the day or lack of useful recreation), school (cutting classes, bad results (mostly Ds and Fs and problematic behavior at school, such as fighting, intimidation, or other severely disruptive behavior), mental health (both internalizing and externalizing problems), substance abuse (abuse of drugs and alcohol), and family (out-of-home-placement, kicked out of home by parents, running away from home, substance abuse by parents, problems with parental rule enforcement, abuse of victim and/or neglect, family members with judicial contact).

Basisraadsonderzoek (BARO). This instrument is a semistructured questionnaire completed by council researchers in the service of the Council of Child Care and Protection in case that an adolescent is suspected of having committed a criminal offense. The BARO questionnaire serves two purposes: It is used to inform judicial authorities (in other words, to give advice as to what penalty to impose) and it establishes whether the committed offense signals underlying disorders or problems in the adolescent's circumstances (Doreleijers, Bijl, Veldt, & Van der Loosbroek, 1999). The BARO is a global diagnostic instrument that screens, among other things, for underlying mental disorders that may have been established in the past and should be reexamined in additional psychiatric investigation. Validation studies have shown that the BARO enables reliable screenings for the presence of mental disorders (Doreleijers et al., 1999; Spaander, 2003). It contains questions that concern the following domains: functioning in family situation, leisure activities, school, friends, external factors, development, case history, physical condition, behavior, emotions, and substance abuse.

Recidivism. Recidivism is defined as the occurrence of one or multiple new judicial contact(s) within 2 years. To measure recidivism, data from the Research and Policy database Judicial Documentation (OBJD) of the Research and Documentation Centre (WODC) of the Ministry of Justice were used.

3.2.3   Procedure and Analyses

For this study data that have been collected by council researchers by means of the BARO questionnaire were analyzed. The information from the BARO reports was then used to score the items in the social sections of the WSJCPA. To guarantee interrater reliability, each 10th file in every branch was independently scored by two researchers, and their results were compared afterward. These comparisons show that

the interrater reliability was high; the kappas showed a minimum of .85. The criminal section scores were based on information that was retrieved from the OBJD of the WODC. Chi-square tests were used to identify differences between boys and girls in the prevalence of risk factors. Pearson correlations were calculated to determine the strength of the relationship between the risk factors and recidivism separately for boys and girls. To assess the significance of the differences between the correlations for boys and girls, Fisher's z was calculated. Because of the disparity in sample sizes between boys and girls, a risk factor was considered sex-specific if the observed difference in correlations between boys and girls was significant.

The risk assessment model for girls was created by means of a Chi-squared Automatic Interaction Detector (CHAID) analysis. CHAID is a classification technique that detects interaction effects between independent risk factors and, therefore, identifies combinations of risk factors that result in high or low risk of recidivism. Therefore, this technique is suitable to provide insight in offender profiles with high and low risk of recidivism, respectively (Thomas & Leese, 2003). Before constructing the model, the girls sample was separated into two random samples, using one sample to construct the model ($n = 125$) and the other to validate it ($n = 115$). The statistical power to detect a medium-sized effect with a sample sizes of $n = 125$ (construction sample) was sufficient, that is, 80% (Cohen, 1988). The predictive value of the models was investigated by means of the area under the curve (AUC), which indicates the generic percentage of correct classifications by the instrument. In general, an AUC value greater than .70 is considered to be acceptable, whereas an AUC value greater than .75 is considered to be high (Dolan & Doyle, 2000; Shapiro, 1999). The average AUC of juvenile justice risk assessment instruments ranges from .53 to .78, with an average of .64 (Schwalbe, 2007).

3.3 Results

3.3.1 *Sex Differences in Recidivism*
Total recidivism within 2 years among boys was 53% ($n = 612$) and 30% for girls ($n = 71$). Table 1 displays the type of the re-offense separately for boys and girls. Both boys and girls re-offended most often with nonviolent property offenses. Boys re-offended more often than girls with violent property offenses and with offenses related to property damage, aggression, or the disruption of public order, whereas girls re-offended more often with other violence offenses, such as physical abuse and intimidation.

Table 1 Type of the re-offense for boys and girls

Recidivism	Boys		Girls		χ2(1)
	n	%	*n*	%	
Non-violent property offense (excl. property damage)	267	44%	35	49%	0.8
Violent property offense (excl. property damage)	53	9%	0	0%	6.6 ***
Other violent offense (e.g. physical abuse, intimidation)	118	19%	20	28%	4.0 **
Property damage, aggression, or disruption of public order	163	27%	10	14%	5.3 **
Other	17	3%	6	8%	1.1
Total	612	100%	71	100%	

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

3.3.2 Sex Differences in Static Risk Factors

3.3.2.1. Prevalence of static risk factors.

Table 2 presents the prevalence of static risk factors separately for boys and girls. The static risk factors consist of background characteristics and risk factors from the criminal domain. With regard to the prevalence of static risk factors, significant differences between boys and girls were found in the following areas: the cultural background, the seriousness and type of the current offense, and the items that relate to the adolescents' criminal past. Girls more often than boys had a Dutch (girls, 48%, boys, 37%) or a Surinamese background (girls, 13%, boys, 9%), whereas boys more often than girls had a Moroccan (boys, 22%, girls, 14%) or a Turkish background (boys, 8%, girls, 3%). With regard to the current offense, girls (24%) committed minor offenses more often than boys (15%), whereas boys (24%) committed major offenses more often than girls (8%). Boys (15%) committed violent property offenses more often than girls (8%). Sexual offenses were only committed by boys (5%). No sex differences were found for other offenses (nonviolent property offenses, violence offenses, and property damage offenses). All items from the criminal history domain occurred more often in boys than in girls. Thus, boys had committed previous offenses more often than girls.

Table 2 Percentage of the prevalence of static risk factors for boys and girls

	Boys (n=1156)	Girls (n=240)	χ2(1)
Age current offense (average)	15.3	15.2	
Cultural background			
Dutch	37%	48%	9.2***
Moroccan	22%	14%	9.0***
Turkish	8%	3%	7.3***
Surinamese	9%	13%	3.9**
Antillean	5%	5%	0.0
Other	12%	15%	0.0
Seriousness current offense			
Minor	15%	24%	13.0***
Medium	61%	68%	3.9***
Major	24%	8%	31.1***
Type of current offense			
Non-violent property	35%	33%	.4
Violent property	15%	8%	10.3***
Sexual offense	5%	0%	11.9***
Other Violence	19%	18%	.2
Property damage etc.	29%	26%	.9
Settlement current offense			
Detention	18%	5%	24.8***
Community service	52%	62%	9.4***
Other sentences	10%	10%	0.0
No sentence/dismissal	11%	10%	0.6
Criminal history			
Age first offense (average)	14.5	14.7	
Prior judicial contact	37%	24%	15.4***
Prior contact Halt	28%	19%	8.5***
Prior violence offense	17%	6%	16.9***
Prior property offense	24%	15%	10.4***
Prior community service	21%	10%	15.6***
Prior detention	9%	2%	14.1***

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

3.3.2.2 Impact of static risk factors.

Table 3 presents the impact of static risk factors on recidivism separately for boys and girls.

Table 3 Correlation between the static risk factors and recidivism for boys and girls

	Boys (*n*=1156)	Girls (*n*=240)	Fisher's z
Age current offense (average)[a]	$\chi2$=26.8(5) ***	$\chi2$=5.3(5)	
Cultural background			
Dutch	-.03	-.16***	1.80*
Moroccan	.10***	.03	.99
Turkish	-.00	-.00	.00
Surinamese	.06*	.19***	1.85*
Antillean	-.10***	.05	2.11**
Other	-.05*	.02	.98
Seriousness current offense			
Minor	.05*	.04	.14
Medium	-.01	-.00	.14
Major	-.04	-.06	.28
Type of current offense			
Non-violent property	.08**	.12*	.57
Violent property	-.00	-.05	.70
Sexual offense	-.07**	-	-
Other Violence	-.02	-.04	.28
Property damage etc.	-.03	-.05	.28
Settlement current offense			
Detention	.08**	.09	.14
Community service	-.05	-.10	.71
Other sentences	-.01	.09	1.13
No sentence/dismissal	-.08**	-.09	.14
Criminal history			
Age first offense (average)[a]	$\chi2$=26.3(5) ***	$\chi2$=6.6(5)	
Prior judicial contact	.20***	.13**	1.01
Prior contact Halt	.15***	.16**	.14
Prior violence offense	.16***	.10	.86
Prior property offense	.17***	.20***	.44
Prior community service	.14***	.22***	1.16
Prior detention	.12***	.03	1.27

a. The chi-square test was used here instead of a correlation, because there is no linear relationship between recidivism and age.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Apart from sex differences in the prevalence of static risk factors, differences were found in the impact of static risk factors on recidivism. The age at the current offense was predictive of recidivism in the case of boys but not in case of girls. For both boys and girls, recidivism increased as the adolescents grew older, peaked at 14 years of age, and decreased again after this age. Cultural background was a significant predictor for recidivism for both sexes, but in a different way: In the case of girls, a Dutch background was correlated negatively and a Surinamese background was correlated positively with recidivism, whereas in the case of boys, an Antillean background was correlated negatively and Moroccan and Surinamese backgrounds were correlated positively with recidivism.

For both boys and girls, the seriousness of the current offense was not predictive of recidivism. The type of the current offense was predictive for both boys and girls but only if it concerned a nonviolent property offense. For boys, sexual offenses were correlated negatively with recidivism. No girl in the present sample committed such offenses. The items from the criminal domain were predictive of re-offending for both sexes. A difference, however, was found for the predictive value of the age at first judicial contact. Age at first judicial contact was predictive in the case of boys but not in the case of girls. Recidivism increased with increasing age at first judicial contact, peaked at 14 years of age, and then decreased.

3.3.3   *Sex Differences in Dynamic Risk Factors*

Prevalence of dynamic risk factors. Table 4 presents the prevalence of dynamic risk factors separately for boys and girls. The following dynamic risk factors are significantly more common in girls than in boys: cutting classes (girls, 42%, boys, 30%), out-of-home placement (girls, 11%; boys, 7%), running away from home (girls, 16%, boys, 7%), substance abuse by parent(s) (girls, 11%; boys, 6%), parental rule enforcement (girls, 15%; boys, 10%), neglect (girls, 10%; boys, 6%), abuse (girls, 23%; boys, 16%), parent(s) with judicial contacts (girls, 13%; boys, 8%), and parent(s) in detention (girls, 4%; boys, 2%). Thus especially those risk factors that pertain to the family domain were more common for girls. Girls (40%) had to deal with an accumulation of risk factors in the family domain more often than boys (28%), and the average number of risk factors in this domain was higher for girls (2.3) than for boys (1.9). Boys experienced significantly more often problems with regard to association with deviant friends (boys, 31%; girls: 22%), problem behavior at school (boys, 42%; girls, 35%), and bad school results (boys, 23%; girls, 16%). The total number of risk factors, however, was not significantly different for boys (3.6) and girls (3.8).

Table 4 Percentage of the prevalence of dynamic risk factors for boys and girls

Problems related to	Boys (*n=1156*)	Girls (*n=240*)	χ2(1)
Friends	31%	22%	6.9***
Use of free time	34%	30%	1.7
Mental health	23%	19%	2.1
Substance abuse	10%	8%	1.9
School	53%	52%	0.1
- Problem behavior at school	42%	35%	2.9*
- Cutting classes/ truancy	30%	42%	12.2***
- Bad school results	23%	16%	6.4**
Family domain			
- Out-of-home placement	7%	11%	4.1**
- Kicked out of home	2%	3%	0.3
- Runaway from home	7%	16%	19.2***
- Substance abuse by parent(s)	6%	11%	9.4***
- Parental rule enforcement	10%	15%	5.3***
- Victim of neglect	6%	10%	3.1*
- Victim of abuse (total)	16%	23%	6.3**
- Victim of abuse (parents)	10%	15%	3.9**
- Sibling with judicial contacts	19%	18%	0.3
- Parent(s) with judicial contacts	8%	13%	5.8**
- Parent(s) in detention	2%	4%	3.7**
3 or more risk factors in home situation	28%	40%	12.4***
Average number of risk factors in the family domain	1.9	2.3	
Average number of risk factors other domains	1.7	1.5	
Average number of risk factors total	3.6	3.8	

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

3.3.3.2 *Impact of dynamic risk factors.*

Table 5 presents the impact of the dynamic risk factors separately for boys and girls. Sex differences also existed in the impact of dynamic risk factors on recidivism. The most important predictors for girls were found mostly in the family domain (i.e., abuse, out-of-home placement, running away from home, substance abuse by parents, and parents with judicial contacts, or parents in detention). These variables were not significantly correlated with recidivism in the case of boys. The most important predictors for boys were the domains

school, friends, and use of free time. These domains were also predictive for girls but decidedly less so than the problems from the family domain. Regarding school-

related risk factors, bad school result (mostly Ds and Fs) was an important factor for boys, whereas cutting classes was more important for girls.

Table 5 Correlation between the dynamic risk factors and recidivism for boys and girls

Problems related to	Boys (*n*=1156)	Girls (*n*=240)	Fisher's z
Friends	.12***	.10	0.28
Use of free time	.13***	.14**	0.14
Mental health	.03	.04	0.14
Substance abuse	.02	.14**	1.70*
School	.08***	.08	0.00
- Problem behavior at school	.06*	.11*	0.71
- Cutting classes/ truancy	.03	.07	0.56
- Bad school results	.09***	.05	0.56
Family domain			
- Out-of-home placement	.04	.04	0.00
- Kicked out of home	-.03	-.00	0.42
- Runaway from home	.04	.13**	1.27
- Substance abuse by parent(s)	.02	.14**	1.70*
- Parental rule enforcement	.10***	.09	0.14
- Victim of neglect	.03	.01	0.28
- Victim of abuse (total)	-.01	.11*	1.69*
- Victim of abuse (parents)	-.01	.17***	2.55***
- Sibling with judicial contacts	.03	.04	0.14
- Parent(s) with judicial contacts	.02	.28***	3.75***
- Parent(s) in detention	.04	.14**	1.41
3 or more risk factors in the family domain	.05*	.22***	2.43**

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

3.3.4   Risk Assessment Model for Girls

The risk assessment model for girls was constructed by means of a CHAID analysis. CHAID is a technique that is particularly suitable for obtaining insight into risk profiles. Figure 1 shows the results of the CHAID analysis.

Figure 1 Results of CHAID analysis: Risk assessment model for girls
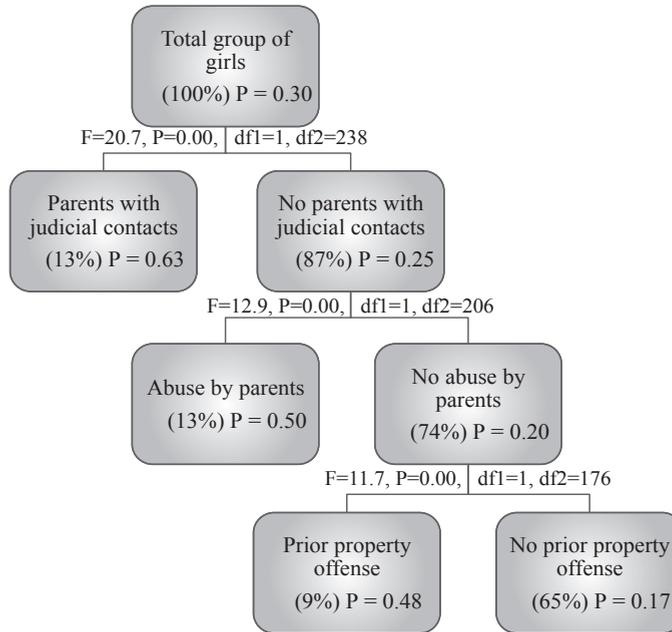
All static and dynamic risk factors (see Tables 2 and 4) were included as independent variables in the model. The most important predictor for recidivism among girls was the variable "parents with judicial contacts." Based on this particular variable, the total number of girls (100% with a risk of recidivism of .30) was split into two groups: a group with parents who have judicial contacts (13% with a risk of recidivism of .63) and a group without parents having judicial contacts (87% with a risk of recidivism of .25). Then, the group of girls without parents with judicial contact was divided again based on the variable "abuse by parent(s)" and the group of girls who were not abused by their parents was subsequently split up based on the variable "prior offense against property." The total group of girls, thus, was divided into four different risk groups: (a) girls with delinquent parents; (b) victims of abuse by parent(s); (c) repeat offenders; and (d) first-time offenders. With an AUC value of .73, this risk assessment model performs well. However, when this risk division is applied to boys, the AUC value dropped to .55, which means that the model performs only slightly better than a random division. This indicated that boys and girls require different risk assessment. Table 6 represents the prevalence of dynamic risk factors in the four different risk groups as distinguished above.

Table 6 Percentage of the prevalence of dynamic risk factors for the segments of the risk assessment model

	Delinquent parents (*n*=32)	Victim of abuse (*n*=30)	Repeat offenders (*n*=21)	First offender (*n*=157)	χ2(3)
Problems related to					
Friends	25%	47%	24%	17%	13.5***
Use of free time	31%	57%	38%	23%	14.7***
Mental health	9%	20%	10%	22%	3.9
Substance abuse	16%	7%	0%	7%	4.8
School	59%	67%	57%	44%	7.2*
Family domain					
Out-of-home placement	22%	17%	5%	8%	7.0*
Kicked out of home	6%	13%	0%	1%	16.3***
Runaway from home	19%	23%	19%	13%	2.8
Substance abuse by parents	34%	17%	10%	6%	22.9***
Parental rule enforcement	34%	63%	43%	33%	10.6**
Victim of neglect	13%	10%	10%	9%	0.4
Victim of abuse (total)	31%	97%	5%	9%	116.4***
Victim of abuse (by parents)	16%	100%	0%	0%	206.1***
Sibling(s) with judicial contact	25%	30%	5%	15%	7.9**
Parent(s) with judicial contacts	100%	0%	0%	0%	240.0***
Parent(s) in detention	28%	3%	0%	0%	53.8***
3 or more risk factors in the family domain	84%	80%	29%	24%	
Average number of risk factors in the family domain	4.1	3.7	1.9	1.7	
Average number of risk factors in the other domains	1.3	2.0	1.2	1.2	
Average number of risk actors	5.4	5.7	3.1	2.9	

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

A summary of the information from this table results in the following profile description.

Group 1: Girls with delinquent parents. With an average of .63, the risk of re-offending is very high in this group. All girls in this group have at least one parent with judicial contacts as a result of having committed a crime. Problems in the family domain are very common in this group: 84% of the girls have three or even more risk factors in this domain. Apart from

delinquency, these families are relatively often affected by out-of-home placement (22%), kicked out of home by parents (6%), substance abuse by parents (34%), abuse (31%), and siblings with judicial contacts (25%). Furthermore, alcohol and drug abuse (16%) is more common with these girls than in the other groups.

Group 2:   Victims of abuse. The risk of recidivism is high in this group, with an average of .50. Girls in this group have all been either physically or sexually abused by their parents. It comes as no surprise, then, that problems in the family domain are very common: 80% of the girls in this group have three or even more risk factors in the family domain. Out-of-home-placement (17%), kicked out of home by parents (13%), running away from home (23%), parental rule enforcement (63%), and siblings with judicial contacts (30%) occur relatively often. Besides problems in the family domain, the girls in this group experience significantly more problems with regard to association with deviant friends (47%), the use of free time (57%), mental health (20%), and school (67%) than girls in the other groups. As a result, this group can be described as a "multiproblem group."

Group 3:   Repeat offenders. This is another high risk group with an average risk of recidivism of .48. All these girls have been in contact with the legal system before for having committed an offense against property. Problems in the family domain are less common than in the first two groups: 29% of the girls in this group have three or more risk factors in the family domain. Also problems in the domains of mental health (10%) and substance abuse (0%) are relatively limited compared with most of the other groups. Although the number of problems in this group is relatively limited (especially in comparison with the groups "delinquent parents" and "victims of abuse"), their chances of re-offending are still high.

Group 4:   First-time offenders. The average of .17 represents a low risk of recidivism in this group. Most of the girls (65%) belong to this group. They have relatively little problems and usually have not been in contact with the legal system before.

3.5 Discussion

The goal of this study was to gain better insight in risk profiles that are specific for girls. We investigated differences between boys and girls with regard to risk factors for recidivism. In addition, a risk assessment model for girls was constructed. The analyses show that most static and dynamic risk factors are predictive of recidivism for

both boys and girls. This concurs with findings of research conducted among general population samples, which has made clear that most risk factors for delinquency are the same for both sexes (Fagan et al., 2007; Megens & Day, 2007; Moffitt et al., 2001; Simourd & Andrews, 1994; Smith & Waterman, 2006; Van der Laan & Blom, 2006). However, also girl-specific risk factors for recidivism were found. These are risk factors with a significantly higher correlation with recidivism among girls than among boys. Girl-specific factors are particularly prevalent in the family domain and concern the following dynamic risk factors: parents with judicial contact, alcohol and/or drug abuse by parents, being a victim of abuse, and alcohol or drug abuse by the adolescent herself. These girl-specific risk factors largely correspond to the risk factors that have been found in clinical studies (Bloom et al., 2002; Hamerlynck, 2008; Hipwell & Loeber, 2006; Loeber & Keenan, 1994; McCabe et al., 2002; Vermeiren et al., 2006; Zahn, 2009). For girls, then, risk factors for recidivism are mostly the same as risk factors for delinquency.

An important finding of the present study is that the girl-specific predictors are also the most important predictors of recidivism for girls. The strength of the correlation between common risk factors (problems with regard to friends, school, and leisure activities) and recidivism is roughly the same for boys and girls. However, girl-specific risk factors (problems in the family domain, being a victim of abuse, substance abuse) are more strongly linked to re-offending than the common risk factors.

Furthermore, the number of problems that (directly) relate to the family domain is clearly very different: The accumulation of problems in the family domain is much more common for girls than it is for boys. What is more, girls' home-related problems are in general more serious and concern abuse and court custody cases. These findings are consistent with the gender paradox notion: Girls commit fewer offenses than boys, but delinquent girls have to deal with more serious problems than delinquent boys do (Hipwell & Loeber, 2006; Loeber & Keenan, 1994).

In the present study, it cannot be determined whether psychiatric problems are more common in girls than in boys. The present study only measured whether mental disorders were present, and does not specify their number or degree. In addition, the number of disorders is probably underrepresented, because it only includes those disorders that had already been diagnosed in the past. Usually, disorders are identified later on in the process, in the next phase of the juvenile justice system (intervention phase) or, in case the BARO has indicated that a disorder might be present, during further psychiatric research. Scientific research has shown that psychiatric problems occur relatively often among delinquent adolescents when compared with general populations (Vermeiren et al., 2006). Especially, delinquent girls are, next to displaying antisocial behavior, often affected by internalizing problems such as depression, anxiety, and posttraumatic stress disorders (Belknap & Holsinger, 2006; Hamerlynck,

2008; Hipwell & Loeber, 2006; McCabe et al., 2002).

The risk assessment model for girls distinguishes four risk profiles: (a) girls with delinquent parents (very high risk); (b) victims of abuse (high risk); (c) repeat offenders (high risk); and (d) first-time offenders (low risk). This division of risk is based for the most part on the two most important predictors for recidivism among girls, namely, delinquent parents and victims of abuse. The importance of these girl-specific risk factors also emerged from studies that focus on risk factors for delinquent behavior. Research by Van der Laan, Van der Schans, Bogaerts, and Doreleijers (2009) shows that family members with police contacts is the only risk factor that is significantly more prevalent among delinquent girls than among delinquent boys. Furthermore, several studies confirm that delinquent girls are victims of (sexual) abuse much more often than are delinquent boys (Calhoun, Jurgens, & Chen, 1993; Gil, 1996; McCabe et al., 2002; Reebye, Moretti, Wiebe, & Lessard, 2000; Widom, 2001).

The results of the current study have some important implications for clinical practice. First, the results show that generic risk assessment instruments should only be used for girls when their predictive validity has been proved to be sufficient for this group. If this is the case, generic instruments can be used but only to determine the intensity of a particular girl's treatment. To determine the focus of a specific treatment, it would be advisable to make use of a risk assessment instrument that has been specially developed for girls and that contains those risk factors that are most important in their case. If treatment addresses the most important risk factors, its effect on the reduction of recidivism can be enlarged.

Second, the risk assessment model that was developed in this study shows that the group of delinquent girls is by no means homogeneous but can be divided into different risk groups, each with its own specific problems, and, possibly, specific needs for intervention. The majority of the girls run a low risk of re-offending (65% are first-time offenders). In light of the risk principle, it is recommendable to intervene as little as possible, because their risk of recidivism is low and little dynamic risk factors are present. Girls who do have a high risk of re-offending (35%) can be divided into three different groups that have their own specific problems. The groups of girls who have delinquent parents also have to deal with other family problems relatively often. A family-oriented approach is, therefore, probably most suitable. The group of girls who are victims of abuse, however, usually experience, apart from domestic problems, a lot of problems in other domains (friends, school, and use of free time). For them, an intensive treatment that focuses on multiple systems is probably preferable. In the case of repeat offenders, there are relatively few dynamic risk factors. The high risk in this group is caused mainly by static risk factors, which makes it difficult to reduce risks by focusing on dynamic risk factors. Further diagnostics will have to reveal whether there are other dynamic risk factors that can be incorporated into treatments for this

group. Possibly, this group partly consists of girls who display "adolescence-limited" antisocial behavior, which can be considered, more or less, as normative for adolescence in general and which is not so much caused by dynamic risk factors, as it is by situational factors (Moffitt, 1993).

In conclusion, this study has shown that some predictors for recidivism are girl specific, and these are particularly prevalent in the family domain. These specific predictors are, furthermore, the most important ones for girls; they are more important than the common risk factors that were found for both boys and girls. On this basis, four girl-specific risk profiles were distinguished. It is important to examine whether the risk profiles that were distinguished in this survey are sufficiently recognized in practice and whether treatment is set up accordingly.

Some limitations of this study need to be mentioned. First, the sample size was larger for boys than for girls, which made it more likely to detect significant risk factors in boys. It should be noted, however, that only in a few cases differences in risk factors between boys and girls could be attributed to differences in statistical power due to disparity in sample sizes. In these cases, Fisher's z tests did not reveal differences between boys and girls. Secondly, the sample size of the girls was relatively small, especially for the CHAID analysis, where the sample of girls was divided into a smaller construction and validation sample. However, even for the relatively small construction sample (n = 125), the 80% statistical power to detect a significant medium-sized effect may be considered sufficient. Moreover, the CHAID model could be replicated in the validation sample, and the girl-specific factors that were part of the model are also found in other studies of delinquent girls, which as a rule use much smaller sample sizes. Third, there might be a gender bias in juvenile justice decisions, such as the decision to arrest, that may have an impact on recidivism rates. For example, girls have been shown to be handled more informally than boys in the judicial system and are more likely to be arrested for behaviors that tend to be "sexualized" or morality based (MacDonald & Chesney-Lind, 2001). Differences in risk factors between boys and girls could therefore partly result from gender biases in recidivism. It should be noted, however, that differential treatment of boys and girls occurs throughout the whole juvenile justice system. There is no indication that the group of girls that was included in the present study would not be representative of the group of girls entering the juvenile justice system. Even though recidivism may not be the same for boys and girls, it is still important to examine sex differences in risk factors for recidivism to be able to adequately assess the risk of recidivism (i.e., encounters with the judicial system) in both sexes and to address the most important dynamic risk factors in treatment of both delinquent boys and girls. Finally, the instruments used are validated on samples that consisted mostly of boys. It is therefore possible that important risk factors for girls were not examined in this study, since only the most important

risk factors for recidivism in a general population of delinquent juveniles (mostly boys) were measured. The present study, however, is one of the first to examine sex differences in risk factors for juvenile re-offending and may, therefore, contribute to the development and validation of risk assessment instruments designed to predict re-offending in delinquent girls (Emeka & Sorensen, 2009). One recommendation for further research would be to examine whether gender-specific risk factors for girls exist that have not yet been detected in mixed-gender studies, as these studies may have focused too much on predictors of re-offending that are relevant for delinquent boys. Therefore, future research should also focus on risk factors that may be expected to be especially relevant to the prediction of female re-offending.

The effect on recidivism among girls of psychiatric problems in the case of the parents, the lack of parenting skills, and family conflicts should be investigated in particular, since former research has shown that these risk factors are relatively common among delinquent girls (McCabe et al., 2002; Schwalbe et al., 2006; Webster-Stratton, 1996). Likewise, the effect of psychiatric problems needs to be examined, because research indicates that sex differences exist in the kind of disorders and the degree to which they occur (Belknap & Holsinger, 2006; Hipwell & Loeber, 2006; McCabe et al., 2002). Besides, the effect of psychiatric disorders on recidivism is also different for boys and girls; anxiety disorders are, for instance, predictive for girls but not for boys (Plattner et al., 2009). By forming a complete picture of the most important risk factors for recidivism for girls, treatment can be optimally adjusted to problems that are specific for girls, and future recidivism can be maximally reduced.