

## Female Juvenile Offenders: Defining an Early-Onset Pathway for Delinquency

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*We examined whether childhood factors predict age of first arrest in adolescent girls referred for placement and treatment for serious delinquency problems (N = 62). Measures included child characteristics (i.e., age of menstrual onset, childhood ADHD, and IQ), family environmental factors (i.e., severe punishment, parental transitions, and sexual abuse), biological parent criminality, and juvenile court records. Parental transitions and biological parent criminality significantly predicted the age of first arrest (M = 12.5 years), and IQ showed a trend to be a significant predictor. The final model accounted for 52% of the variance. A younger age of first arrest was related to increased health-risking sexual behaviors and to increased self-reported delinquency. Logistic regression analyses indicated that membership in an early-onset group could be reliably formed using family and child predictors, with accurate classifications for 46–90% of the girls. Family environmental and child characteristics played a strong role in predicting which girls would be arrested at an earlier age. The strong predictive utility of parental transitions and biological parent criminality, in particular, suggest two avenues for identifying girls at risk for delinquency problems.*

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Until recently, and despite substantial work on the development of boys' antisocial behavior, theoretical and empirical models describing the development of girls' antisocial behavior have been scarce. Females under age 18 comprise one of the fastest growing segments of the juvenile-justice population, with their arrests accounting for 27% of total arrests during 1999; furthermore, delinquency cases involving adolescent females increased by 83% between 1988 and 1997 (American Bar Association & National Bar Association, 2000). Researchers have shown

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that the outcomes for adolescent girls with severe antisocial behavior include various negative health and mental health risks, including participation in health-risking sexual behavior, psychiatric illness, substance dependence, school dropout, mortality, and continued criminal behavior (Bardone, Moffitt, & Caspi, 1997; Keenan, Loeber, & Green, 1999; Kessler et al., 1996; Pajer, 1998; Pawlby, Mills, & Quinton, 1997). Considering these outcomes, early-onset antisocial behavior can be seen as a compounding risk factor that increases the likelihood of additional negative behaviors. Thus, researchers must examine the etiology of girls' severe antisocial behavior to guide prevention and intervention efforts.

Silverthorn and Frick (1999) presented a theoretical model postulating a *delayed-onset* pathway in the development of girls' antisocial behavior in which early childhood risk factors predicted adolescent-onset behavior problems. According to Silverthorn and Frick, girls' antisocial behavior is delayed because of factors such as parental and school-based socialization practices that encourage girls to express behavior symptoms through internalizing behaviors during middle childhood; gender stereotypes that become increasingly salient and inflexible in formal schooling; girls' adherence to the feminine gender stereotype, which does not sanction aggressive behavior; and the possible presence of protective factors for girls, but not for boys. Silverthorn and Frick suggested that the prevalence rates (male:female) of antisocial behavior across childhood and adolescence, the known risk factors for each sex, and the increased deleterious long-term outcomes for girls call into question whether an early-onset model of girls' antisocial behavior exists. For example, most antisocial girls first show severe antisocial behavior in adolescence but, unlike their late-onset male counterparts, tend to show a negative and diverse set of long-term outcomes into young adulthood. Based on prior research, Silverthorn and Frick proposed risk factors that might precipitate girls' delayed-onset antisocial behavior. Hypothesized risk factors that overlap across gender included family dysfunction, family psychopathology, difficult child temperament, and child cognitive and neuropsychological dysfunction. Hypothesized risk factors specific to girls have included experiencing physical and/or sexual abuse (Rosenbaum, 1989; Widom, 1989) and experiencing early menstrual changes (Caspi & Moffitt, 1991). Moffitt and Caspi (2001) posited an alternative theoretical model of the development of girls' antisocial behavior in which the same risk factors lead to early-onset delinquency in boys and in girls (e.g., neurological and cognitive factors, temperamental characteristics, school achievement, parenting practices, and socioeconomic disadvantage), with fewer girls than boys experiencing these risk factors. Moffitt and Caspi hypothesized another set of precipitating risk factors for late-onset delinquency in boys and girls (e.g., having perceptions of the consequences of antisocial behavior as reinforcing), with fewer anticipated sex differences. From this theoretical perspective, Moffitt and Caspi suggested that most delinquent girls are of the late-onset subtype and that late-/early-onset girls will show the same pattern of precipitating risk factors as late-/early-onset boys.

In a test of their model, Moffitt and Caspi (2001) examined data from a birth cohort participating in the Dunedin longitudinal study. Consistent with their theoretical model and that of Silverthorn and Frick (1999), they found a 10:1 ratio (male:female) for early-onset delinquency and a 3:2 ratio for late-onset delinquency. This suggests that, in population-based samples, few girls will exhibit early-onset patterns and that, by adolescence, the sex ratio will have narrowed. In contrast to Silverthorn and Frick's model, Moffitt and Caspi found that the early-onset girls had high-risk backgrounds similar to the early-onset boys (e.g., inadequate parenting, neuropsychological problems, and temperament problems); the late-onset girls and boys did not show such risk factors. They also found that boys and girls follow a similar etiological pattern of *life-course-persistent* and *adolescence-limited* antisocial behavior; thus, separate theoretical models for girls are not needed. Other researchers have similarly demonstrated that an early-onset group of antisocial girls exists. In a longitudinal sample of 820 girls, Cote, Zoccolillo, Tremblay, Nagin, and Vitaro (2001) found that a subset of girls demonstrated disruptive behaviors in kindergarten and continued to show oppositional and aggressive behaviors into early adolescence. Such girls were more likely to be diagnosed with conduct disorder at age 15 than girls not exhibiting chronic patterns of disruptive behaviors. Furthermore, girls with early-onset conduct problems may have more severe risk profiles than early-onset boys or late-onset girls (McCabe, Hough, Wood, & Yeh, 2001).

Despite consistent findings that youths showing early-onset delinquency are at risk for serious difficulties in later adolescence and adulthood, diverse criteria have been used to define "early-onset" behavior. Patterson and colleagues defined early-onset boys as those arrested prior to age 14 according to official arrest records (Patterson, DeGarmo, & Knutson, 2000; Patterson, Forgatch, Yoerger, & Stoolmiller, 1998). Moffitt and colleagues defined a life-course-persistent group of youths by examining parent- and teacher-reported delinquency at ages 5, 7, 9, and 11 and self-reported delinquency at ages 15 and 18. Youths with scores of more than 1 *SD* above the mean on parent or teacher ratings during three of the four childhood assessments (by at least one teacher and one parent and by at least one of the self-reported assessments), were categorized as life-course-persistent; youths who did not meet the childhood criteria but met the adolescent criteria were classified as adolescent-limited (Moffitt & Caspi, 2001; Moffitt, Caspi, Harrington, & Milne, 2002). In another approach, four groups are formed based on parent/youth reports of one or more DMS-III-R conduct disorder symptoms: onset at younger than age 8, onset between ages 8 and 10, onset between ages 11 and 13, and onset at older than age 13 (Lahey et al., 1999). In a final approach, Fergusson and Horwood (2002) aggregated parent- and teacher-reported externalizing problems at age 8, 9, and 10 and considered the top 10% of this group to exhibit conduct problems. Offending during adolescence was measured via parent-report. Youths who showed low rates of conduct problems between ages 8 and 10 and who showed moderate offending during early adolescence (peaking around age 13 and

declining thereafter) were considered early-onset, adolescent-limited offenders. Youths who showed conduct problems between ages 8 and 10 and who had high offense rates between age 11 and 17 were considered chronic offenders.

A consistent and appropriate classification approach for girls does not exist, and it remains unclear whether it should differ from that used for boys. Given sex differences in the onset of puberty and in societal expectations and pressures during middle childhood and early adolescence, further exploration of the appropriate classification strategy for girls is needed. Based on prior methodological and theoretical work, this study aims to clarify three interrelated questions:

1. What are the precipitating conditions that lead girls to be arrested at an earlier age?
2. Are girls who are arrested earlier more likely to engage in cascading risky behaviors?
3. Can early-onset status be predicted from child and family factors?

The population prevalence of girls exhibiting severe antisocial behavior in middle childhood is low. Thus, studies with normative samples or with population-based samples may not find sufficient variability in the onset age of girls' conduct problems. For example, in the Dunedin population-based study ( $n = 500$  girls), only 6 girls fit Moffitt and Caspi's (2001) criteria for early-onset, life-course-persistent delinquency. We focused on a sample of adolescent girls who had histories of serious delinquency problems and who were referred by the juvenile justice system to a treatment efficacy study. By relying on a juvenile justice sample, we represented females most at risk, within which we examined the precipitating factors leading to poor outcomes. Benefits and limitations of this sampling strategy are discussed later.

## METHOD

### Sample and Procedure

The 62 girls in our sample were referred for placement and treatment from the Oregon Youth Authority for serious delinquency problems and are part of a study examining the effectiveness of a Multidimensional Treatment Foster Care (MTFC) program for delinquent girls, a family-based alternative to residential, institutional, and group care for children and adolescents with behavioral, emotional, and mental health problems (Chamberlain & Reid, 1998; Eddy & Chamberlain, 2000). The participating girls were 13–17 years old at baseline ( $M = 15.3$ ;  $SD = 1.1$ ); 75% were Caucasian, 1% were African-American, 7% were Hispanic, 7% were American Indian, 3% were Asian, and 7% were of mixed ethnic heritage. In contrast, 93% of the girls (ages 13–19) living in the region at the time of the study

Table I. Sample Means and Standard Deviations for Each Construct

Variable	M(SD)
Predictors	
Girl's age at assessment	15.3 (1.1)
Menstrual onset (age)	11.5 (1.6)
IQ	90.1 (8.9)
Percent of sample with ADHD diagnosis	11.0 (31.1)
Number of severe punishment events	1.1 (1.2)
Number of parental transitions prior to age 13	8.0 (5.1)
Number of sexual abuse events	5.1 (4.1)
Biological parent criminality <sup>a</sup>	0.5 (0.4)
Outcome	
Age at first arrest	12.5 (2.0)
Cascading behavioral correlates	
Depressive symptoms	24.7 (9.2)
Health-risking sexual behavior	2.2 (1.5)
Delinquency	429.6 (1346.9)
Substance use	13.6 (4.1)

<sup>a</sup>0 = no biological parent convictions; 0.5 = one biological parent with a conviction; 1.0 = both biological parents with a conviction.

were Caucasian (U.S. Department of Commerce, 1992). Prior to entering the study, girls had an average of 12 criminal arrests (*SD* = 9.1) and three out-of-home placements (*SD* = 5). The data reported here are from the baseline assessment (prior to treatment) and from one variable only collected at the 12-month assessment.

### Measures

#### *Child Characteristics*

In accordance with prior work examining antisocial behavior risk factors, 3 child characteristics were measured: age of menstrual onset, IQ, and ADHD diagnosis. Age of menstrual onset was self-reported at baseline. Test-retest data was available for 23% of the sample. The average discrepancy between the two reports was 4.3 months, suggesting satisfactory reliability. Means and *SDs* for all constructs are reported in Table I.

IQ was measured by the girls' standard score on the Peabody Picture Vocabulary Test-III (PPVT; Dunn & Dunn, 1997) at baseline and by the girls' standard scores on the basic skills and factual knowledge portions of the Mini Battery of Achievement (MBACH; Woodcock, McGrew, & Werder, 1994) at the 12-month assessment. The PPVT, has good criterion validity when compared with standardized achievement tests such as the Wechsler Intelligence Scale for Children (*r* = .82-.92; Wechsler, 1974). The MBACH is a brief, wide-range test of basic skills and knowledge that assesses basic skills (reading, mathematics, and writing) and

factual knowledge. MBACH reliability coefficients range from .83 to .94; test-retest correlations range from .85 to .96. Standard scores on the PPVT and the MBACH measures were averaged to form an IQ composite (Cronbach's  $\alpha = .87$ ).

Lifetime diagnosis of ADHD was measured using the Diagnostic Interview Schedule for Children-IV (Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000), which was designed to be administered by clinically untrained interviewers and covers diagnostic criteria from the DSM-IV, the DSM-III-R, and the ICD-10. Test-retest kappas range from .10 to .39; validity kappas range from .27 to .79.

### *Family Environmental Characteristics*

We measured three family environmental variables that have been shown to relate to problematic outcomes for children: parental transitions, severe punishment, and sexual abuse. Parental transitions was measured by summing the number of adult household member transitions that the girls experienced prior to age 13 based on parent- and self-report.

Severe punishment was measured using the injurious punishment scale of the Assessing Environments Scale-III (Knutson, 1978), a standardized true/false questionnaire. The injurious punishment scale consists of five items assessing whether punishment experienced during childhood caused the participant to receive burns, cuts, broken bones, or bruises: 0 (*punishment did not occur*) or 1 (*punishment occurred*). Participant responses were summed across the five items (Cronbach's  $\alpha = .64$ ).

Sexual abuse was measured by examining whether the girl was subjected to sexual behavior prior to age 13 using a modified version of the Childhood Sexual Experience Questionnaire (Zaidi et al., 1991). Using a self-administered version of this measure, girls indicated whether any of 14 acts occurred before age 13 (yes/no format). To form a measure of sexual abuse, we summed the 1 (*yes*) and 0 (*no*) responses to the 14 items. Sample items included being exposed to sexual parts, being asked to commit sexual acts, and having forced sexual activity. Internal consistency of the scale was acceptable (Cronbach's  $\alpha = .90$ ).

### *Biological Parent Criminality*

Referral agencies and parents were asked whether either biological parent had been convicted of a crime: 0 (*no convictions*) and 1 (*one or more convictions*). Biological mother and father conviction scores correlated .22. An aggregated biological parent criminality score was computed by averaging both biological parents' conviction scores. When information was known only about one biological parent (6% of the families), just that score was used. Because nearly all participants lived with at least one biological parent for some period of time prior

to the start of this study, the criminality scores represented a genetic risk and an environmental risk to the girls.

### *Arrest Records*

Our outcome measure, age of the girl's first arrest, was determined using juvenile court records from each county that the girls had lived in. Court records have been found to be reliable indicators of externalizing behavior (Capaldi & Patterson, 1991; Capaldi & Stoolmiller, 1999).

### *Cascading Risky Behaviors*

At the baseline assessment, we measured four behaviors hypothesized to lead to cascading problems for girls: depressive symptoms, participation in health-risking sexual behavior, self-reported criminal/antisocial behaviors, and substance use. The girls' depressive symptoms were measured using the Center for Epidemiologic Studies Depression Scale (Radloff, 1977), which assesses current levels of depression. Sample items include "not being able to shake the blues" and "feeling depressed." Responses were based on a 4-point scale ranging from 0 (*rarely*) to 3 (*most times*). Interitem consistency was acceptable ( $\alpha = .91$ ).

Health-risking sexual behavior was measured using the Sex Survey (Capaldi, Stoolmiller, Clark, & Owen, 2002), which assesses sexual knowledge and behavior, with an emphasis on health-risking behaviors. We formed a health-risking sexual behavior composite by aggregating the girls' responses to five items about sexual behavior over the preceding 12 months: whether she had sex with someone she had known for less than 24 hours, whether she had sex with someone who injected drugs, the number of her sexual partners, how often she discussed safe sex practices with a new partner, and how often she failed to practice safe sex. Each item was recoded to be on a scale from 0 (*no risk/no behavior committed*) to 1 (*high risk/multiple behaviors committed*) before being summed for a maximum score of 5. Interitem consistency was acceptable ( $\alpha = .70$ ).

Self-reported criminal/antisocial behavior was measured with the Elliott Self-report of Delinquency Scale (Elliott, Huizinga, & Ageton, 1985). Each girl was asked how many times she violated certain laws during the preceding 12 months. We used the general delinquency subscale, summing the 21 items in the scale (e.g., attempting to steal a motor vehicle or hitting a parent). Internal consistency was acceptable ( $\alpha = .91$ ).

An indicator of substance use was developed by summing the self-reported frequency of tobacco use, marijuana use, alcohol use, and hard drug use. Each item was rated on a 5-point scale (maximum score of 20) ranging from 1 (*never*) to 5 (*used one or more times a day*). Interitem consistency was acceptable ( $\alpha = .77$ ).

## RESULTS

### Prediction of Age of First Arrest

We conducted a hierarchical regression analysis to examine how well the model predicted the age of first arrest. We hypothesized that child factors, family factors, and parental criminality would make independent contributions: child factors were entered in Step 1, family environmental factors were entered in Step 2, and biological parent criminality was entered in Step 3. Interaction terms (*ns*) were excluded from our models. In Step 1, the regression model accounted for 21% of the variance (see Table II). There was a trend for age at assessment to be significant and for menstrual onset to be significant. In Step 2, the model accounted for 45% of the variance. The change in  $R^2$  was significant; parental transitions ( $\beta = -.51, p < .001$ ) was a significant predictor and girls' age at assessment and IQ score approached significance. In Step 3, the model accounted for 52% of the variance in age of first arrest. The change in  $R^2$  was significant; parental transitions ( $\beta = -.42, p < .01$ ) and biological parent criminality ( $\beta = -.28, p < .05$ ) were significant predictors. Additionally, girls' IQ approached significance. The Step 3 final model was highly significant,  $F(8, 45) = 5.98, p < .0005$ .

**Table II.** Regression Analysis Predicting Age of First Arrest

	Beta	$R^2$	$\Delta R^2$
Step 1			
Girl age	.25 <sup>†</sup>		
Menstrual onset	.25 <sup>†</sup>		
IQ	.20		
ADHD	.03	.21*	
Step 2			
Girl age	.21 <sup>†</sup>		
Menstrual onset	.03		
IQ	.20 <sup>†</sup>		
ADHD	.00		
Severe punishment	.01		
Sexual abuse	-.09		
Parental transitions	-.51***	.45***	.24**
Step 3			
Girl age	.17		
Menstrual onset	.11		
IQ	.21 <sup>†</sup>		
ADHD	.00		
Severe punishment	.00		
Sexual abuse	-.05		
Parental transitions	-.42**		
Biological parent criminality	-.28*	.52***	.07*

Note. Final Model (Step 3):  $F(8, 45) = 5.98, p < .0005$ .

<sup>†</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

### Cascading Risk Behaviors

We then examined whether the age of first arrest related to additional behaviors hypothesized to put girls at increased risk for poor long-term outcomes. The correlations between age of first arrest and the constellation of risk behaviors (while controlling for the girl's age at assessment) indicated that the age of first arrest was significantly related to self-reported delinquency ( $r = -.41, p < .01$ ) and to participation in health-risking sexual behavior ( $r = -.29, p < .05$ ) but not to depression ( $r = .08, ns$ ) or to substance use ( $r = -.15, ns$ ). A clinical cut-off score was also computed for the depression scores. More than one half of the sample fell in the clinical range; however, age of first arrest remained unrelated to clinical levels of depression.

### Early-Onset Vs. Late-Onset Groups

We then used logistic regression analyses to examine whether the child and family environmental factors predicted early-onset or late-onset status. We classified early onset in three different ways: (A) girls whose first arrest occurred prior to age 13 ( $n = 28$ ), (B) girls whose first arrest occurred prior to age 12 ( $n = 17$ ), and (C) girls whose first arrest occurred prior to menstrual onset ( $n = 13$ ). As in the regression models predicting age of first arrest using the continuous data, we used a hierarchical approach entering child characteristics in Step 1, family environmental characteristics in Step 2, and biological parent criminality in Step 3. When using classification C, menstrual onset was excluded as a predictor in the analysis. The percent of girls accurately classified as early onset was 89%, 71%, and 46% (A, B, and C, respectively). The accuracy rates expected by chance are 52%, 31%, and 24%; thus, the observed accuracy rates represent an increase over chance of 37%, 40%, and 22%. Similarly, strong results were found when the accuracy rates of *not* belonging to the early-onset group are examined. The accuracy when the girl did not show early onset delinquency was 81%, 89%, and 90%. The accuracy rates expected by chance were 48%, 69%, and 76%; thus, the observed accuracy rates for not belonging to the early-onset group represent an increase over chance of 33%, 20%, and 14%. The Step 3 logistic regression models are presented in Table III. As is shown in the table, all three models showed a good fit to the data and accounted for a substantial portion of the variance in the group membership variables.

## DISCUSSION

Our first aim was to determine whether, within a sample of girls with chronic delinquency, the age of first arrest could be predicted from child and family factors.

**Table III.** Logistic Regression Models Predicting Membership in an Early-Onset Group: Step 3 Models

	Beta			Odds ratio			Nagelkerke R <sup>2</sup>		
	A	B	C	A	B	C	A	B	C
Girl age	-1.28*	-0.69	-0.10	0.28					
Menstrual onset	-1.63*	-0.68	—	0.20					
IQ	-0.13 <sup>†</sup>	-0.30*	-0.12 <sup>†</sup>	0.88	0.74	0.89			
ADHD	4.02	-1.53	-7.83						
Severe punishment	-0.21	1.20	-0.27						
Sexual abuse	-0.36	-0.07	0.00						
Parental transitions	0.42*	0.41*	0.19*	1.52	1.51	1.21			
Biological parent criminality	5.65*	3.98*	2.73*	283.90	53.57	15.31			
							0.73	0.65	0.42

Note. A = Early-onset status classified using criteria of first arrest prior to age 13. B = Early-onset status classified using criteria of first arrest prior to age 12. C = Early-onset status classified using criteria of first arrest prior to menstrual onset. Final model A:  $-2 \log \text{likelihood} = 31.90$ ;  $\chi^2(8) = 42.88$ ,  $p < .0005$ . Final model B:  $-2 \log \text{likelihood} = 33.61$ ;  $\chi^2(8) = 33.66$ ,  $p < .0005$ . Final model C:  $-2 \log \text{likelihood} = 42.08$ ;  $\chi^2(7) = 17.53$ ,  $p < .05$ .

<sup>†</sup> $p < .10$ . \* $p < .05$ .

As hypothesized, child and family factors appear to independently contribute to the age of first arrest in girls. Our final regression model was highly significant, accounting for more than one half of the total variance in the age of first arrest; thus, IQ, family transitions, and biological parent criminality might be powerful predictors of early-onset delinquency in girls. These results are consistent with other studies examining high-risk samples, as early-onset girls are more likely than late-onset girls to have familial and individual risk factors (McCabe et al., 2001; Moffitt, Caspi, Dickson, Silva, & Stanton, 1996).

Our second aim was to examine whether girls first arrested at an earlier age are at increased risk for cascading risky behaviors that increase the likelihood of long-term problems. The age of first arrest was significantly related to participation in health-risking sexual behavior and to criminal/antisocial behavior. Thus, as in males, early-onset (vs. late-onset) delinquency relates to poorer outcomes and greater long-term problems. In addition, girls first arrested at an earlier age might be at risk for cascading long-term problems in adolescence. For example, by engaging in health-risking sexual behaviors, girls increase their likelihood of an unplanned pregnancy and becoming teen mothers (Capaldi et al., 2002; Miller-Johnson et al., 1999; Woodward & Fergusson, 1999).

The nonsignificant relationships of age of first arrest with substance use and with depression are surprising, as prior work has shown delinquency to be related to depression and to substance use in girls (Loeber & Stouthamer-Loeber, 1998; Pedersen, Mastekaasa, & Wichstrom, 2001). The distribution of substance use and depression in our sample are relatively normal, thus eliminating range restriction as a possible explanation. A logical next step might be to examine these girls in

late adolescence and early adulthood, when associations with substance use and depression may strengthen.

Our third aim was to examine whether early-onset girls exist and whether early-onset status can be predicted using family and child predictors. The frequency distribution suggests that 71% of the sample was first arrested prior to age 14 ( $M = 12.5$ ), a cut-point used for boys by Patterson and colleagues (Patterson et al., 2000; Patterson et al., 1998). Furthermore, 23% of the sample was arrested prior to age 11, suggesting that, regardless of the classification method used, a large portion of the girls could be considered early-onset delinquents. This finding contrasts the theoretical work of Silverthorn and Frick (1999) and prior findings with epidemiological and population-based samples (Moffitt & Caspi, 2001) that have found the early-onset subtype to be nonexistent or very small compared to the late-onset subtype. However, these discrepancies might relate to the sample characteristics.

Regardless of the classification strategy employed, parental transitions and biological parent criminality were strong predictors of early-onset status. Biological parent criminality increased the odds of an early arrest by 15 to 283 times; thus, it may be a key variable to help select participants for prevention and intervention work. Especially for girls, having a biological parent who has been convicted of a crime may initiate risk factors and negative consequences for the girls that make them prone to have similar experiences. Parental convictions often make parental transitions likely, as one parent might become incarcerated. Thus, such girls are dually affected by their parent's criminal behavior. Although justification can be provided for any of the classification approaches used in this study, more research is needed to determine which approach most accurately identifies girls who will have ongoing problems in adolescence and young adulthood.

Given steadily increasing population baserates for delinquent girls, it is beneficial to study girls who are already having problems; doing so allows sufficient power to examine the processes leading to delinquency problems. However, such a sampling strategy cannot be used to examine how child and family environmental factors relate to antisocial behavior in normative populations. Our findings may be stronger or weaker than in the general population. Although some developmental research on antisocial behavior in the general population of girls exists (Fagot & Leve, 1998; Leadbeater, Kuperminc, & Hertzog, 1999; Moffitt & Caspi, 2001; Wangby, Bergman, & Magnusson, 1999), studies combining normative and clinical girls are needed. A sample of high-risk males *and* females could provide additional information regarding sex-differentiating factors leading to early-onset delinquency problems.

Future research should also include measures of temperament and of community/neighborhood factors, as prior work (Caspi, Henry, McGee, Moffitt, & Silva, 1995; Moffitt et al., 1996; Silverthorn & Frick, 1999) has suggested a correspondence between early temperamental characteristics and later delinquency.

Including such factors would improve our prediction models (Ingoldsby & Shaw, 2002).

Future research should also include prospective data for the family environmental and child factors. Our participants were not recruited until they had been arrested; thus, only retrospective reports of family transitions, childhood sexual abuse, severe punishment, menstrual onset, and ADHD were obtained. Fortunately, we were able to use some multiple-informant measures and to use official arrest data (rather than self-reported arrests) as our outcome measure. Nonetheless, replication with prospective data is needed.

Our work has logical implications for future prevention and intervention work and provides corroborating evidence that low child IQ, early menstrual onset, severe punishment, sexual abuse, frequent family transitions, and biological parent criminality are risk factors relating to girls' age of first arrest. Thus, prevention studies should focus on families with such characteristics between early childhood and middle childhood. These families could be taught behavioral management strategies—consistent and effective discipline, positive support, and effective monitoring—that have proven to be effective in clinical and prevention trials (Eddy & Chamberlain, 2000; Reid, Eddy, Fetrow, & Stoolmiller, 1999). Further, in intervention samples of girls who have been arrested, examining earlier family environment and child factors at the time of the girls' first arrest could provide useful information in predicting which girls will continue to have problems.

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