MALE AND FEMALE DELINQUENCY TRAJECTORIES FROM PRE THROUGH MIDDLE ADOLESCENCE AND THEIR CONTINUATION IN LATE ADOLESCENCE

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ABSTRACT

This study of male and female adolescent delinquency trajectories focuses on the prediction of late adolescence delinquency, based on earlier delinquency and social support. In this 3-wave longitudinal survey, 270 Dutch adolescents (113 males and 157 females) ages 12 to 14, were followed for a period of 6 years. For males, the level of delinquent activity in late adolescence strongly depends on earlier delinquent activities ($R^2 = .33, p < .0005$). In contrast, the level of female delinquency in late adolescence is far less predictable ($R^2 = .18, p < .001$), and could not be predicted from delinquent activities during pre and early adolescence, while support from the mother during late adolescence was associated with reduced delinquency for females. Different models may be needed to explain the development of delinquency for males versus females.

The age-crime curve, with delinquency peaking during middle adolescence, has been well documented in numerous studies (Hirschi & Gottfredson, 1983; Shavit & Rattner, 1988; Steffensmeier, Allan, Harer, & Streifel, 1989; Steffensmeier & Streifel, 1991; Tittle & Ward, 1993). In general, the rate of previous offenses predicts the rate of later offenses and, in this sense, a relatively stable pattern of offending seems to exist (Overbeek, Vollebergh, Meeus, Engels, & Luijpers, 2001). Cross-sectional studies also show that adolescent delinquency diminishes after the age of 16; i.e., late adolescents frequently refrain from delinquency. Of course, individual trajectories can vary widely from the general pattern, and we must ask how normal developmental trajectories and criminal careers can be differentiated. In this respect, Farrington (1999) posed two key questions: "How far can we predict the later criminal career from the early criminal career? How are different criminal career features (e.g., age of onset, duration, frequency of offending) interrelated?" (p. 155).

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Moffitt (1993) distinguishes groups of delinquents with different types of careers, more specifically life-course-persistent antisocial behavior, and adolescence-limited delinquency. The small group of consistent delinquents are at risk for continuation of their delinquent activities, while the adolescence-only delinquents are more likely to desist from further delinquent activities during late adolescence and early adulthood. Patterson, DeBaryshe, and Ramsey (1989), Loeber (1990), Moffitt (1993), Moffit, Caspi, Dickson, Silva, and Stanton (1996) have all pointed to the importance of early, pre-adolescent onset of delinquency as a distinctive feature of persistent criminality. From this thesis of early-childhood-onward chronic offenders, it follows that a group of offenders can be identified who are frequently involved in delinquency throughout adolescence. Later onset of delinquency seems to reflect a temporary disposition, and thus a higher probability of refraining from delinquency and desistance during further development. It should be noted, however, that the thesis of early-childhood-onward chronic offenders has been formulated on the basis of data from male offenders only.

Recent research by Laub, Nagin, and Sampson (1998) and Nagin (1999) has focused on the discrimination of developmental trajectories of delinquents using the data from three longitudinal studies (Glueck & Glueck, 1950; Farrington & West, 1993; Tremblay, Desmarais-Gervais, Gaspon, & Charlebois, 1987). The groups in these studies were formed on the basis of a special analysis of the available longitudinal delinquency data, using a nonparametric mixed Poisson model which takes behavior changes into account. Laub et al. (1998) used the Glueck and Glueck (1950) data to study desistance and found that the chronic offenders showed a rapid rise in delinquency during adolescence with a relatively high rate from middle adolescence on. The groups of nonchronic offenders also peaked during middle adolescence but had considerably lower levels in late adolescence and early adulthood when compared to the chronic groups. According to Laub et al. (1998) "Conditional upon having a juvenile record, the intensity of adolescent delinquency seems to be only moderately predictive of eventual desistance" (p. 232).

Nagin (1999) analyzed Farrington and West's data from Cambridge (Farrington & West, 1993) and Tremblay et al. (1987) data from Montreal. Although the Cambridge data reflect the age-crime curve, in the Montreal data Nagin found that the chronic offenders show a relatively constant level of physical aggression, without a clear increase during middle adolescence. The Cambridge data show low rates of delinquency before the age of 12. In contrast, the Montreal sample shows a different pattern, with relatively high levels for all groups at younger ages on the psychometric scale of physical aggression. There may be various

reasons for these differences: cohort differences, the measurement instruments (official data versus psychometry), and the object of measurement (convictions versus physical aggression). Nevertheless, in both samples the small group of chronic offenders has a much higher rate of delinquency than the rest of the sample. These chronic delinquents have a low chance of desisting from criminal activities in late adolescence and adulthood.

Two demographic variables appear to be important for the explanation of juvenile delinquency: age and sex. According to Hirschi and Gottfredson (1983), however, "the age distribution of crime cannot be accounted for by any variable or combination of variables currently available to criminology" (p. 554), and this statement has generated considerable debate (Baldwin, 1984; Hirschi & Gottfredson, 1984; Tittle, 1988; Gottfredson & Hirschi, 1988). Shavit and Rattner (1988) have presented data that confirm Hirschi and Gottfredson's position, while Tittle and Ward (1993) have also provided some support.

Analysis of the FBI's Uniform Crime Reports by Steffensmeier et al. (1989, 1991) show the age distributions for such crimes as fraud and gambling differ strongly from the age distributions for burglary and vandalism, suggesting that the age distributions may be behavior specific. More specially, Stefensmeier et al. (1989) found that the age curves for such lucrative delinquent activities as gambling peak much later than the age curves for other delinquent activities, and also do not tend to decline.

With regard to the effect of gender on crime, Gottfredson and Hirschi (1990) have asserted that gender differences appear to be invariant across time and space and that males invariably commit more offenses than females. Self-report studies also show this disproportionality to be consistently greater the more serious the offense (Adler, Mueller, & Laufer, 1998). Steffensmeier (1993) reports evidence that the most significant change in the percentage of female arrests involves the overall rise in property crimes, especially minor theft and fraud, showing that female arrests have increased and are therefore less invariable than has been assumed.

Female delinquency seems to have increased more sharply than male delinquency during the past two decades (Hoyt & Scherer, 1998), and the attention paid to female delinquency has increased. Katz (2000) asserts that such traditional theories as strain theory are better suited to the explanation of male than female delinquent behavior. Hoyt and Scherer (1998) conclude their extensive review with the statement that the research results for female delinquency are not conclusive. Evidently, there are large differences between males and females with respect to delinquency. Females are less frequently arrested for criminal activities (Hoyt & Scherer, 1998). Even though

some research indicates that females report the committing of less serious crimes as often as males (Hoyt & Scherer, 1998), they commit serious crimes less frequently (Kruttschitt, 1966), they are less frequently involved in violent crimes (Weiner, 1989; Kruttschnitt, 1966), and more frequently involved in specific sexual offenses, such as prostitution (Hoyt & Scherer, 1998). In addition, men and women have been found to be treated differently by the judicial system (Hoyt & Scherer, 1998; Uggen & Kruttschnitt, 1998).

According to Hagan (1998), gender is the best predictor of criminality of all the available demographic variables. Comparison of male and female delinquency trajectories may reveal essential differences in the mechanisms that determine both the onset of delinquency and desistance from it. Interestingly, the best predictor of male delinquency is often some measure of previous delinquency. This makes the understanding of life course development more relevant, raising the question as to whether the thesis of early-childhood-onward chronic offenders also holds for females.

The social bonds built up and established during adolescence and early adulthood may have different effects on male versus female delinquent trajectories. Laub et al. (1998) have found a variable that may be used with data on previous delinquency for the prediction of desistance in late adolescence and early adulthood: good marriage. At the same time, their data indicate that individual differences in childhood, as well as family differences, have only limited value for prediction of later delinquency. Limited parental attachment may be more relevant to the development of delinquency in girls than in boys (Hoyt & Scherer, 1998). Males appear to be more strongly influenced by their peer group during adolescence while females appear to be more affected by intimate relationships.

According to Laub et al. (1998), adult social bonds are a prominent characteristic of those who desist from delinquency. Marriage as such does not seem to have an enduring preventive effect, but there is some preventive effect when the marriage is good. Chronic offenders are significantly less likely to be involved in good marriages. Childhood and juvenile characteristics seem to be insufficient to predict patterns of future offending, and it appears that even the classic predictors of onset and frequency of delinquency may not explain desistance. Helsen, Vollebergh, and Meeus (2000) have shown that parental support (or lack thereof) remains the best indicator of emotional problems during adolescence. However, in a previous study, Meeus and Dekovic (1995) showed that identity development is mostly influenced by peers, while parents have only an additive positive influence. Barnes, Reifman, Farell, and Dintcheff (2000) found that parental support and monitoring are important factors that influence adolescent alcohol drinking levels.

Hirschi and Gottfredson have argued that using this kind of social correlates to explain desistance is misguided since the factors that explain crime or its absence are constant across the life course (Hirschi & Gottfredson, 1983, 1984, 1994; Gottfredson & Hirschi, 1988, 1990). Tittle and Ward (1993) emphasize the importance of including adolescence in the study of delinquent development, as the physical, psychological and social changes are so much greater in this stage of the life cycle than in later stages. It is, therefore, important to ask whether most individuals follow the same developmental trajectory in relation to delinquency during the early stages of their life course.

RESEARCH QUESTIONS

In our present longitudinal study of 270 Dutch delinquents, we examined the male and female delinquency trajectories during adolescence, addressing the following questions: (1) Is there a group of female offenders who follow the same delinquency trajectory as male persistent offenders, starting at an early age, persisting throughout adolescence, with a relatively high frequency of delinquent activity including more serious offenses? (2) Do offenders who have refrained from delinquency at one or more points during the early phases of adolescence show a higher probability of desistance in late adolescence? (3) Can late-adolescent delinquency be predicted on the basis of earlier delinquency and social support?

METHODS

Participants

Between September and November 1991, members of an existing Dutch panel were approached for a study of adolescent development. Our respondents were drawn from a nationwide panel of 10,000 households, which was maintained by INTERACT, an organization for consumer research. The resulting sample consisted of 3,393 subjects between the ages of 12 and 24. In this accelerated panel study, longitudinal data were collected in three waves, in 1991, 1994, and 1997, with a relatively large cross-section at each of the three waves. Data for this study were collected as part of the larger Utrecht Study of Adolescent Development (USAD; Meeus & 't Hart, 1993).

The household panel was formed on the basis of a randomly chosen selection of municipalities, with inclusion probabilities equal to their relative size. Next, households in these municipalities were drawn from the register of all addresses in the Netherlands, provided by the

Dutch Postal Services. Addresses where nobody was living and institutions such as military camps and nursing homes were omitted. The sample of adolescents was drawn from the households in such a way that each youth had an equal chance of inclusion in the sample. 't Hart (1992) checked the representatives of the first wave sample by comparing it with population figures published by the Dutch Central Statistical Office (CBS). No differences were found between the sample and the CBS data with respect to district, urbanization level, educational level or religious affiliation. It was concluded that the sample can be regarded as representative of the Dutch indigenous adolescent population of the early 1990s. A random selection of subjects was taken from this sample for the longitudinal part of the study. Although the 3,392 subjects of the first wave all gave their informed consent to remain participants in the longitudinal study, 822 of them ultimately refused to take part in the second and third waves (Meeus, Branje, & Overbeek, 2003; Overbeek, 2003). The retention rate between the first and the second wave was 81% of the random sample. The retention rate for the third wave was 83%. Meeus et al. also carried out an analysis to determine whether there were differences between the subjects who participated in the longitudinal sample and those who did not in terms of gender, age, education level, and measures of parental and partner support and delinquency. They concluded that the longitudinal results of the USAD study must be interpreted with caution, but that the findings concerning delinquency and parental support can be generalized to broader populations.

As the purpose of the current study was to examine individual delinquency trajectories from pre-adolescence onwards, the cross-section in this study consisted of all adolescents who were 12, 13 or 14 years old in 1991, who were followed in 1991, 1994, and 1997. This group consisted of 270 adolescents, 113 males and 157 females. Based on the analysis of Meeus et al. (2003) and Overbeek (2003), we consider the group of 270 as probably representative of the 12-14 age group cohort of the Dutch native adolescent population in 1991 (that is, children of Dutch parents). In any case, we limit the possible generalization of the results to the specific variables used in this study, and more specifically to self-reported delinquency and social support.

Procedure

Each subject was interviewed for about one hour. The adolescent was then given a set of written questionnaires to be completed at a later point in time and returned in a postpaid envelope. The questionnaires addressed delinquent behavior, attitudes toward delinquent behavior, political and societal attitudes, health, general well-being and personal development, relationships within the family, school achievement, and professional career.

Instruments

Delinquent activity. During the interview, the subjects were asked to self-report their frequency of 28 delinquent behaviors during the previous year. The behaviors range from shoplifting and joy-riding to burglary and the use of violence, all behaviors punishable by law; so called pre-delinquent behaviors, such as running away from home or staying away from school are not included. Ten of the 28 questions concern common but minor offenses, especially vandalism and embezzlement of goods of lesser value, while another 13 questions concern less common but more serious offenses, including breaking and entering and the use of violence. The full delinquency scale has an estimated reliability of .68 (Cronbach's alpha). To assess the rate of delinquency before the age of 10, the respondents were asked to report the age of onset of every delinquent behavior during the first wave of data collection. The number of delinquent behaviors committed before the age of 10 is used as a proxy of pre-adolescent delinquent activity.

Parental and peer support. The role-relation questionnaire (Meeus, 1989) was used to measure the levels of social support from parents and friends, as perceived by the adolescent. Four specific areas of content were considered: leisure time, relational problems, problems at school, and problems at work. For each area of content, the adolescents were asked to indicate on a 10-point scale the degree to which they received support from a standard set of reference persons (e.g., father, mother, friends, best friend, acquaintances). For instance, adolescents were asked: "When you are having problems in relations with someone else, or when you are feeling lonely, who helps you? Please note that this question refers to problems in relations with others, for example when you are quarreling, when someone does not like you or when you are feeling lonely."

In this study we have combined the similar questions concerning the four content areas. They were added to form a social support scale with a range from 0 to 3. Missing values (less than 5%) were estimated using the EM-algorithm provided by SPSS. Four social-support variables thus became available for each wave: support from father, best friend, and from other friends. Male versus female friends were not distinguished in the questionnaire. The estimated reliability indices for these measures across the three waves were as follows: support from father .79, .86, and .84; from mother .69, .79, and .80; from best friend .82, .83, and .88; and from other friends .78, .73, and .69.

RESULTS

Table 1 presents the mean delinquency rates for four stages of development: pre-adolescence (by proxy), early adolescence (12–14), middle

Table 1

Frequencies of Delinquent Behavior for Eight Trajectories and Four Stages of Adolescent Development, and Percentage Refraining from Delinquency During Late Adolescence

				Mean delinquency frequency				%
				Adolescent stage				refraining
Individual trajectory	Sex	*n*	%	pre < 10	early 12-14	middle 15-17	late 18-20	at age 18-20
1. Nondelinquency	M	13	11.5	0.00	0.00	0.00	0.77	77
in pre, early and	F	49	31.2	0.00	0.00	0.00	1.14	69
middle adolescence	Total	62	22.9	0.00	0.00	0.00	1.06	71
2. Refraining in	M	19	16.8	0.00	0.00	3.32	2.16	42
pre and early	F	31	19.7	0.00	0.00	3.52	1.39	52
adolescence only	Total	50	18.5	0.00	0.00	3.44	1.68	48
3. Refraining in	M	2	1.8	0.00	2.50	0.00	0.00	100
pre and middle	F	9	5.7	0.00	2.67	0.00	1.44	44
adolescence only	Total	11	4.1	0.00	2.64	0.00	1.18	55
4. Refraining in	M	5	4.4	1.20	0.00	0.00	1.60	40
early and middle	F	9	5.7	1.22	0.00	0.00	1.67	56
adolescence only	Total	14	5.2	1.21	0.00	0.00	1.64	50
5. Refraining in pre	M	10	8.8	0.00	2.40	5.20	4.80	10
adolescence	F	13	8.2	0.00	4.62	6.38	1.85	38
only	Total	23	8.5	0.00	3.65	5.87	3.13	26
6. Refraining in	M	16	14.1	1.81	0.00	4.25	2.44	38
early adolescence	F	12	7.6	1.25	0.00	3.75	1.50	58
only	Total	28	10.4	1.57	0.00	4.04	2.04	46
7. Refraining in	M	11	9.7	1.82	4.36	0.00	3.18	27
middle adolescence	F	14	8.9	1.79	3.43	0.00	1.29	57
only	Total	25	9.3	1.80	3.84	0.00	2.12	44
8. Consistent	M	37	32.7	1.95	5.19	5.89	4.86	19
delinquency	F	20	12.7	2.30	4.50	6.65	3.40	30
	Total	57	21.1	2.07	4.95	6.16	4.35	23
Total	M	113	100.0	1.12	2.38	3.55	3.19	35
	F	157	100.0	0.62	1.41	2.36	1.62	54
	Total	270	100.0	0.83	1.82	2.86	2.28	46

adolescence (15–17) and late adolescence (18–20), as well as the percentage of adolescents that refrained from delinquent activity in their late adolescence. Eight trajectories were distinguished on the basis of the patterns of reframing from delinquent activity in pre-adolescence, early adolescence, and middle adolescence.

Group 1 includes the nondelinquents, who refrained during pre-adolescence, early adolescence, and middle adolescence. In late adolescence, 71% of this group also refrained from delinquency (77% for males and 69% for females). Groups 2 through 7 consist of the less consistent trajectories, with either more persistent refraining from delinquency in the early stages of adolescence (groups 2 and 3), or desistance after an initial phase of delinquency (group 4). Group 5 refrained from delinquency only in the pre-adolescent phase. Groups 6 and 7 show a period of desistance after an initial phase of delinquency, but clearly the desistance is not persistent. Group 8 includes the consistent delinquents, those who were delinquent during pre-adolescence, early adolescence, and middle adolescence. The consistent delinquents in group 8 started early, persisted during early and middle adolescence, and typically remained active in late adolescence. For this group, the total refraining rate in late adolescence was only 23%, or 19% for males and 30% for females. The total findings presented in Table 1, as well as the results for males and females separately, show a peak in delinquent activity during middle adolescence and are in this respect in accordance with the age-crime curve.

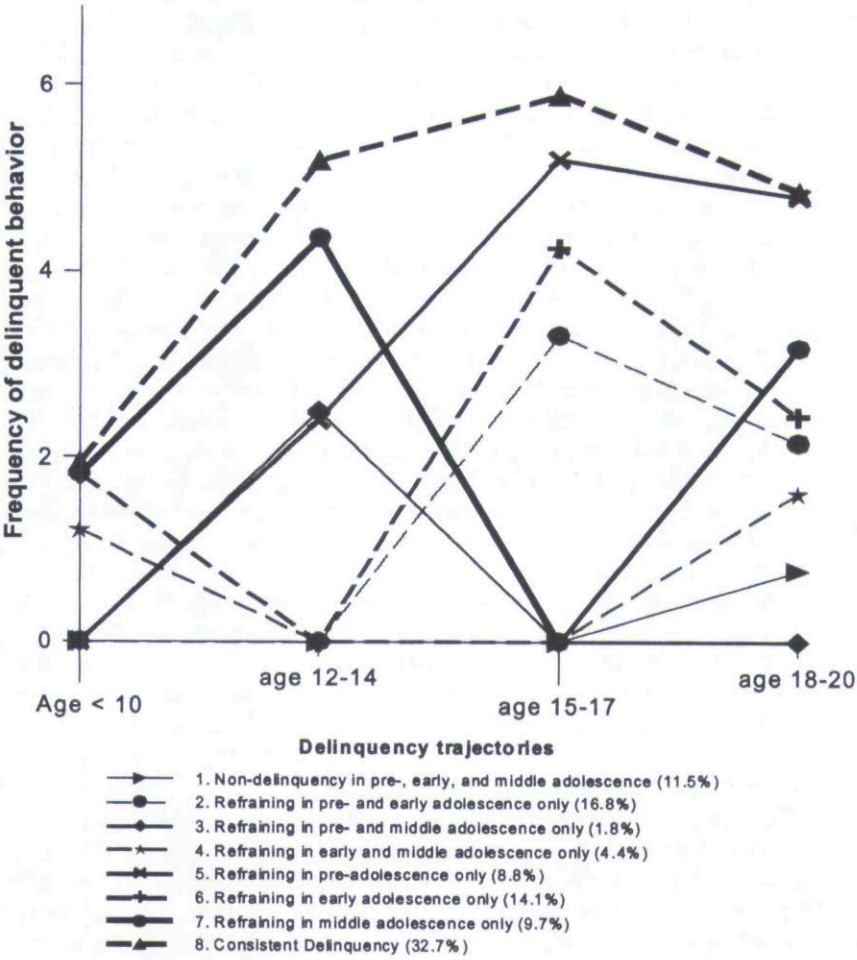
For the males, the most frequently occurring trajectory from pre to middle adolescence is consistent delinquency (group 8; n = 37, 32.7%). For the females, the most frequently occurring trajectory is persistent nondelinquency (group 1; n = 49, 31.2%). All possible less consistent trajectories occur during adolescence (groups 2 to 7). The inconsistent trajectories are all characterized by one or two measurements with no reported delinquency during the past year.

Twenty-nine percent of the group of adolescents who refrained from delinquent activity from pre-adolescence through middle adolescence (group 1) fall into delinquency during late adolescence (males 23%; females 31%). The mean frequency of delinquent activity for this group is fairly low (total 1.06; males .77; females 1.14). Table 1 also shows that only 44 individuals (16%) of the total sample of 270 adolescents report no delinquent activity from pre-adolescence through late adolescence. This small group consists of 10 males (8.8% of all males) and 34 females (21.7% of all females).

In Figure 1, all eight trajectories, based on self-report delinquency data from pre through middle adolescence, are shown for the male adolescents. We used the frequency of delinquent behavior in late adolescence to study the continuation of these trajectories. First, we examined the differences in the frequencies of delinquent behavior during

Figure 1

Mean Frequencies of Male Delinquent Behavior for Eight Delinquency Trajectories



late adolescence between the group of consistent delinquents and the other seven groups, using Dunnet's post-hoc t-test. Even though the differences in Figure 1 seem large, there is also a considerable amount of within-group variance. As a result, only groups 1 ($p < .003$) and 2 ($p < .03$) show significantly lower frequencies of delinquent behavior in late adolescence. Second, we examined the differences between the group of persistent nondelinquents (group 1) and the other 7 groups.

Here, groups 8 ($p < .003$) and 5 ($p < .03$) show significantly higher frequencies of delinquent behavior in late adolescence when compared to group 1.

Figure 2 shows the results for the female adolescents, and again we use the frequency of delinquency in late adolescence to study the continuation of the different trajectories. Clearly, the differences between groups 1 to 7 are not very large in late adolescence. Dunnett's t-test for post-hoc analysis indicates a significant difference only with group 8 (consistent delinquents), when the group of nondelinquents is used as a reference group ($p < .003$). However, when we use the group of consistent delinquents as a reference group, groups 1 ($p < .030$), 2 ($p < .03$), and 7 ($p < .05$) all differ significantly from group 8, as far as frequency of delinquent behavior in late adolescence is involved.

In general, the differences between the males and females are considerable. Female delinquent activity is less frequent than among males (see Table 1) and considerably more females (31.2%) than males (11.5%) follow a strict nondelinquent trajectory from pre through middle adolescence. Refraining from delinquency in late adolescence is more frequent among girls than among boys (F (1, 268) = 10.51, $p <$ .005). The differences in delinquent frequency between boys and girls at wave 3 are significant (F (1, 268) = 16.65, $p < .0005$).

Nevertheless, the group of female consistent delinquents (group 8; n = 20, 12.7%), who have been active from pre-adolescence onwards, shows a relatively high delinquency frequency (3.40), while all other female groups show a frequency of less than 2. A larger percentage of these female adolescents (group 8) continue persistent delinquent activities in late adolescence (70%). This group is not significantly different from the group of male consistent delinquents concerning the frequency of delinquent behavior (F (1, 55) = 1.31, *n.s.*) in late adolescence.

In Table 2, two hierarchical linear regression models are presented for prediction of the frequency of delinquent behavior in late adolescence. The first model involves age, the proxy for pre-adolescent behavior, and the frequencies of delinquent behavior in early and middle adolescence. The variable age is added to exclude its influence in the estimates of the contribution of the measures of previous delinquent behavior, even though the age differences are small (2 years at most). The other model involves the inclusion of support of mother in late adolescence (wave 3). Next to these models, several other models were tested. These models involved the successive inclusion of support of friends (waves 1 and 2), support of both parents (waves 1 and 2), and support of parents and friends (wave 3). However, these other models did not have a significant effect on the estimation of delinquency in late adolescence, and are therefore not presented.

Figure 2

Mean Frequencies of Female Delinquent Behavior for Eight Delinquency Trajectories

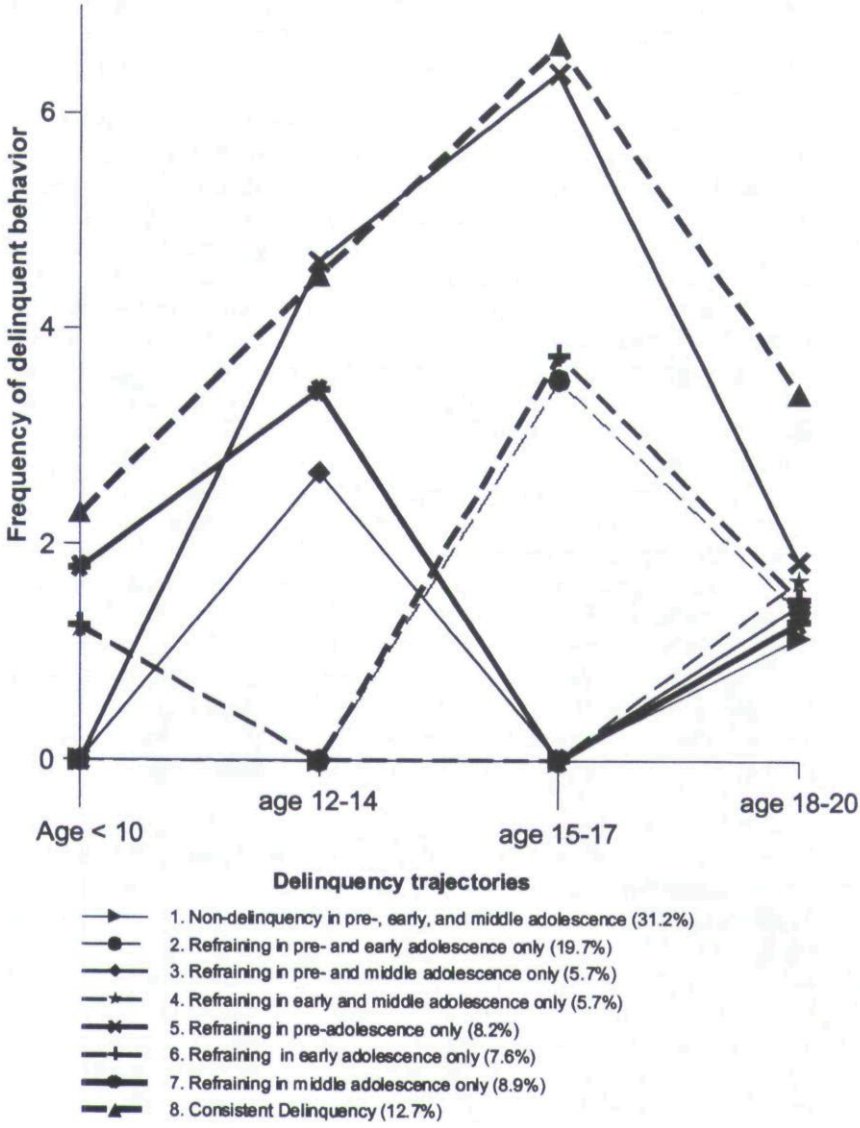


Table 2

Summary of Two Hierarchical Multiple Regression Models for the Prediction of the Frequency of Delinquent Behavior in Late Adolescence

Sex	Model	R	R^2	R^2 change	F change	$df1$	$df2$	p
Male	1. Previous delinquent behavior	.58	.33	.33	13.52	3	109	.000
	2. + Support of mother in late adolescence	.58	.33	.00	.64	1	108	.425
Female	1. Previous delinquent behavior	.34	.11	.11	6.43	3	153	.000
	2. + Support of mother in late adolescence	.42	.18	.07	12.35	1	152	.001

Note. The models were tested separately for 113 males and 157 females.

For the males, the data show that previous delinquency is a strong predictor of late adolescent delinquent activity (R^2 = .33), while none of the support variables add significantly to this prediction. The findings for the female adolescents are different. First, the measures of previous delinquency are predictors of moderate strength (Table 2, model 1 R^2 = .11). Second, in contrast to the findings for male adolescents, support of the mother during late adolescence (wave 3) improves the prediction to R^2 = .18. Table 3 shows the β coefficients and beta coefficients for the two models.

Table 3 shows that neither pre-adolescent nor early adolescent delinquent activity is predictive of the late adolescent delinquent activity of females, and only adolescent activity during middle adolescence contributes significantly (p = .008). Secondly, for females, the support of mother during late adolescence makes a significant contribution to the prediction of delinquent behavior in late adolescence (p = .001). In contrast, late adolescent delinquent behavior of males can be predicted from earlier adolescent delinquency (p = .008) and middle adolescent delinquency ($p < .0005$), while pre-adolescent delinquency and social support from the mother do not contribute significantly.

Since it may be expected that the consistent trajectories, both nondelinquents and consistent delinquents, lead to a better prediction than the inconsistent patterns, we examined these differences separately. Using the second model, R^2 = .44 for the males who followed the two consistent trajectories 1 and 8, but only .25 for the male adolescents who followed the inconsistent trajectories. The differences for females are relatively larger: R^2 = .23 for the females who followed consistent trajectories, and R^2 = .14 for the females who followed the inconsistent trajectories. Moreover, the latter is dependent on only support of the mother during late adolescence: for the females who followed the inconsistent trajectories, previous delinquency has no predictive value (R^2 = .01).

In addition to the prediction of frequency of all delinquent activities in late adolescence, we have also studied a subsample of more serious delinquent behavior (13 questions) involving such serious offenses as breaking and entering, car theft, and aggressive offenses, and an even smaller subsample consisting of only aggressive offenses (5 questions). Since the measures based on these subsamples is less reliable, these results are presented only in summary: the differences between the trajectories are smaller, while the gender differences are larger. Both male and female consistent delinquents are found to be most involved in the more serious offenses.

Table 3

Linear Regression Prediction of Frequency of Late Adolescent Delinquent Behavior by Earlier Delinquency Data for Males and Females Separately

Model	Variable	*B*	*SE*	Beta	*t*	*p*
Males 1	(Constant)	1.190	.429		2.774	.007
	Pre-adolescent delinquency	.003	.250	.011	.128	.898
	Early adolescent delinquency	.298	.110	.259	2.711	.008
	Middle adolescent delinquency	.360	.076	.408	4.693	.000
Males 2	(Constant)	1.941	1.031		1.882	.062
	Pre-adolescent delinquency	.003	.247	.013	.149	.882
	Early adolescent delinquency	.299	.110	.260	2.713	.008
	Middle adolescent delinquency	.356	.076	.409	4.699	.000
	Support mother late adolescence	-.388	.484	-.063	.801	.425
Females 1	(Constant)	.952	.248		3.836	.000
	Pre-adolescent delinquency	.338	.198	.144	1.703	.091
	Early adolescent delinquency	.007	.082	.072	.822	.412
	Middle adolescent delinquency	.156	.058	.222	2.695	.008
Females 2	(Constant)	3.567	.782		4.563	.000
	Pre-adolescent delinquency	.228	.194	.097	1.175	.242
	Early adolescent delinquency	.005	.079	.058	.680	.497
	Middle adolescent delinquency	.157	.056	.223	2.806	.006
	Support mother late adolescence	-1.194	.340	-.264	-3.515	.001

Note. Model Males 1, R^2 = .33; Males 2, R^2 = .33; Females 1, R^2 = .11; Females 2, R^2 = .18.

CONCLUSIONS AND DISCUSSION

This longitudinal study is based on self-report data, unlike other research on delinquency trajectories which is often based on official records. As can be expected, these data indicate considerably higher frequencies of delinquent behavior and include less serious offenses than official data. We have presented indications that similar patterns can be found only when more serious delinquent behavior is taken into consideration. An interesting aspect of the current study is the opportunity to compare the delinquent development of male versus female adolescents. This is especially interesting, because other longitudinal studies are often restricted to the study of males.

Our results clearly show that there is a group of females who are persistently delinquent through adolescence. Although this group is smaller than their male equivalent, the findings show that this group of persistent female offenders is strongly involved in delinquent activities. Both of these male and female groups of consistent offenders have a relatively large chance of continuing their delinquent behavior in late adolescence. Furthermore, male and female consistent offenders do not show significantly different frequencies of delinquent behavior in late adolescence.

The majority of the adolescents (55.8% of the males and 56.1% of the females) followed one of the less consistent trajectories. The inconsistent trajectories are characterized by one or more periods of at least one year during adolescence of refraining from delinquency. Adolescents who reported refraining from delinquent activity for a shorter or longer period of time showed a higher probability of refraining during late adolescence when compared to adolescents who reported delinquent activity in the period from pre through middle adolescence. Clearly, their behavior is less consistent and less predictable and their behavioral problems may need other handling than that of the persistent groups. Our study involves only a limited number of measurements in time, and as a consequence, our ability to detect periods of refraining during adolescence is limited. Nevertheless, we found that for adolescents who follow trajectories with at least one period of one year of refraining from delinquent activity during adolescence, the possibility of predicting future delinquent behavior on the basis of previous delinquency is considerably less, when compared to adolescents who follow consistent patterns.

Mofitt (1993), as well as Loeber (1990) and Patterson et al. (1989) have pointed out the relevance of pre-adolescent delinquency as a possible indicator of consistent delinquent behavior during adolescence and adulthood. The group of offenders who persist from pre-adolescence onwards is estimated at 6 or 7% at the most. In the present

study, a proxy variable was used for the estimation of pre-adolescent delinquency, and this proxy proved to be a weak predictor of delinquency during late adolescence. For male adolescents, previous delinquent activity during early and middle adolescence is a strong predictor ($R^2 = .33$) for the rate of delinquency during late adolescence, while our data on social support added very little to the explanatory model. Late adolescent delinquency of females turns out to be less easy to predict on the basis of measures of previous delinquency ($R^2 = .11$), while the variable representing the support of mother during late adolescence leads to an improvement ($R^2 = .18$). Furthermore, female late-adolescent delinquency is not predictable on the basis of delinquent activities during the early phases of adolescence. It appears that different models are needed to explain the development of delinquency for males versus females.

It appeared to be very difficult to find other variables which could explain variance in addition to that explained by previous delinquency. For the males, none of the variables concerning the support of father, mother, and friends during early, middle, or late adolescence added significantly to the prediction based on earlier delinquency. None of the other tested variables (not represented in the tables) such as socioeconomic status, religious behavior, parental divorce, school performance, various attitude variables, sport activity, and other leisure time activities, were able to add to the explanation of late adolescent delinquency, beyond the explanation by previous delinquent activity. The inclusion of other known predictors for delinquency, including characteristics from childhood, early adolescence, or middle adolescence may simply not improve the accuracy of the aforementioned prediction. Laub et al. (1998) also indicated that individual differences in childhood, as well as family differences, have only limited value for prediction of later delinquency.

Technical improvements in the prediction of later delinquency may be possible when the nonlinear diminishment of delinquency frequency after middle adolescence is taken into account. An approach in which further delinquent development is predicted on the basis of a nonparametric mixed Poisson model (see Nagin and Land, 1993), for example, enables the prediction of lower frequencies of delinquency at later ages. Nagin (1999) has demonstrated this with the Cambridge and Montreal data, while Laub et al. (1998) has showed it with the Glueck and Glueck data. Not only is the level of offending taken into account in such an approach, but the rate of change is offending. An interesting alternative is a simulation model, where earlier delinquency explains later delinquency in a feed-forward cycle (Dijkum & Landsheer, 2000).

Our finding that social support is especially relevant for female adolescents is in accordance with the findings of Hoyt and Scherer (1998).

Nevertheless, more studies on the differences between male and female adolescent delinquency are necessary. In addition, the hypothesis that the longer adolescents refrain from delinquency, the lower the probability of later delinquent involvement merits further attention.

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