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LIKE FATHER, LIKE SON

The Relationships between Conviction Trajectories of Fathers and their Sons and Daughters

MARIEKE VAN DE RAKT*, PAUL NIEUWBEERTA and NAN DIRK DE GRAAF

This study elaborates on the relationship between convictions of fathers and the development of convictions of their offspring over the lifespan. Unique official data from the Netherlands Criminal Career and Life Course Study (CCLS) are used to investigate the intergenerational transmission of criminal behaviour (8,085 sons and daughters and an observation period of over 40 years). Trajectory modelling and growth curve analysis are used to establish (1) differences between the criminal careers of children from different groups of fathers and (2) differences within the groups of children in the development of their individual criminal careers. The findings demonstrate that children of convicted fathers are much more likely to be convicted themselves in comparison to those whose fathers have never been convicted. Also, children of highly persistent fathers tend to commit more delinquent acts in every phase of their lives than children of law-abiding fathers. An additional analysis shows the existence of four distinct trajectory groups (non-delinquents, moderate desisters, early desisters and chronics) amongst the children.

Introduction

In the last two decades, we have witnessed a massive increase in studies that investigate the criminal behaviour of individuals over the life course. Ever since Blumstein initiated the Criminal Career Paradigm in 1986, the studies on criminal careers have been accumulating (Blumstein *et al.* 1986). The main part of this research focuses on *intragenerational* developments in criminal behaviour—namely the trajectories of criminal behaviour over the lifespan of individuals (Laub and Sampson 2003; Blokland and Nieuwbeerta 2005). Within the tradition of the *intragenerational* research, crime is viewed as one of many developmental trajectories one commences during the course of his life. Important transitions in the lifecycle, like getting married or entering the labour market, influence development in other domains like crime (a.o. Brame *et al.* 2003; Laub and Sampson 2003; Blokland and Nieuwbeerta 2006).

A much smaller tradition within the developmental and life-course criminology considers *intergenerational* developments—namely the similarities and differences between the criminal behaviour of parents and that of their children (Farrington 2003; 2005). Research on these *intergenerational* developments of criminal behaviour is far less developed than its *intragenerational* counterpart. Only a limited number of studies with a sufficient amount of statistical power allow examination of the relationship between offending behaviour of parents and that of their children (e.g. Farrington *et al.* 1996; Thornberry *et al.* 2003).

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The main reason for the lack of such studies is that the requirements for the design of these studies are daunting. One needs to have longitudinal information on the development of criminal behaviour of both parents and their children. Also, a prospective design with two successive generations is required, since one should not select upon the dependent variable (in this case, the criminal behaviour of the children). Furthermore, convicted as well as non-convicted parents should be included in the study. Finally, very long periods of observation are needed in order to examine both generations into adulthood (a time-span of at least 50 years). So far, not surprisingly, virtually no study meets these requirements. Therefore, this study can be considered as a new landmark. It will provide the first results on intergenerational research using a research design which meets all the requirements mentioned above.

Theoretically, as well as methodologically, we will connect the research tradition of intragenerational comparisons with the tradition of the intergenerational transmission. Our results will give insights into the transmission of convictions over the entire lifespan. We will contribute to and improve upon the limited body of research on the transmission of crime from parents to their offspring and investigate upon the development of complete criminal careers over a period of more than 30 years. Data of a unique new large-scale prospective study with a three-decade observation period will be used.

Earlier Research in Intergenerational Resemblance of Criminal Behaviour

Although previous empirical research on intergenerational transmission of criminal behaviour is limited in scope, some studies did examine similarities in criminal behaviour between parents and their children. In Table 1, we present an overview of all these studies since 1980.¹ Unfortunately, many of these studies have several disadvantages. First, most studies use small samples and retrospective designs. Second, none of the studies (except the CSDD—see below) analyses the influences of parental criminal behaviour on the behaviour of their children after the period of adolescence. Third, most studies concentrate on sons and neglect the influences of parental convictions on their daughters. Fourth, most studies lack a comparable control group. Finally, almost all earlier studies are descriptive in nature; developmental and criminological theories are hardly tested.

Despite these limitations, the studies did reveal important insights into the association between parental criminality and offspring criminality. In the Chicago Youth Development Study, Gorman-Smith *et al.* (1998) found that persistent delinquents are more likely to originate from families with deviant conducts. In the Pittsburgh Youth Study, Farrington *et al.* (2001) noted a similar pattern. These results show that the father is the most important relative in predicting the criminal behaviour of an individual. Sampson and Laub (1993) also reveal a substantial association between the criminal behaviour of fathers and that of their offspring in their analyses of the Glueck-data. This association is mediated via upbringing and supervision. A study by Thornberry (2005) investigates the influence of anti-social behaviour of parents on the aggressive behaviour of their young children. For fathers, a direct effect of delinquency on the

¹These studies were found after a search in Social Science Citation Index, Picarta and Criminal Justice Abstracts. Studies investigating upon the transmission of incest (e.g. Dunlap *et al.* 2002) and on the transmission of aggression (e.g. Conger *et al.* 2003) remain outside the scope of this research.

TABLE 1 Overview of studies of intergenerational transmission of criminal behaviour since 1980

Authors	Year	Dataset	N	Measurement	Selection
<i>RETROSPECTIVE</i>					
Hagan & Palloni	1990	Cambridge Study in Delinquent Development (London)	218 research subjects and their fathers	Self report & official reports	Convicted and non convicted boys
Sampson & Laub	1993	Unravelling juvenile delinquency (Gluecks) (Boston)	480 research subjects and their fathers	Self-report & official reports	Convicted and non convicted boys
Rowe & Farrington	1997	Cambridge Study in Delinquent Development (London)	344 research subjects, parents and siblings	Self-report & official reports	Convicted and non convicted boys
Gorman-Smith et al	1998	Chicago Youth Development Study (Chicago)	288 research subjects and their parents	Self report	5th and 7th grade students
Farrington et al.	1998	Cambridge Study in Delinquent Development (London)	411 respondents and their fathers	Official reports	Convicted and non convicted boys
Farrington et al.	2001	Pittsburgh Youth Study (Pittsburgh)	1395 research subjects, parents and siblings	Self report	Samples of 1 st , 4 th and 7 th years students (boys)
Jaffee et al.	2003	Environmental Risk Longitudinal Twin Study (England & Wales)	1116 twins and their parents	Self-report	Sample of twins, more high-risk families
<i>PROSPECTIVE</i>					
Farrington et al	1996	Cambridge Study in Delinquent Development (London)	397 research subjects, parents and siblings	Official reports	Convicted and non convicted boys
Thornberry et al	2003	Rochester Youth Development Study (New York)	109 fathers, 111 mothers, 296 children (Max 10 year old)	Self-report Reports of partner	Selection of students of public schools (7 th & 8 th grade)
Smith & Farrington	2004	Cambridge Study in Delinquent Development (London)	408 grandfathers, 178 fathers 322 children (Max. of 15 years old)	Self-report & official reports	Convicted and non convicted boys
Thornberry	2005	Rochester Youth Development Study (New York)	109 fathers, 111 mothers, 296 children (max. of 15 years old)	Self-report Report of partner	Selection of students of public schools (7 th and 8 th grade)

behaviour of their young children exists. Also, a direct effect of parents' delinquency on the behaviour of their children is revealed; for mothers, this relation is mediated through the parenting strategy she uses (Thornberry *et al.* 2003). In sum, the results of these studies indicate a strong association between the criminal behaviour of parents and that of their children.

A landmark study in the tradition of the intergenerational transmission of crime is the Cambridge Study in Delinquent Development (CSDD). This study, which is executed by Farrington (originally by West), includes data of a population of 411 London boys (born in 1958) and their families. On the basis of interviews, the boys were tracked from the age of eight until 40 and official data were collected as well. Most of these 411 boys have children of their own nowadays. These children—now between 18 and 35 years old—are also interviewed (Smith and Farrington 2004). In numerous articles, the relationships between the offending of fathers, brothers, sisters and individuals have been investigated (see Table 1). Findings of the CSDD are impressive. The CSDD identifies the relationship between criminal behaviour of the parents of the research subjects (G1) and the criminal behaviour of research subjects themselves (G2), as well as between the criminal behaviour of the research subjects (G2) and that of their children (G3). Rowe and Farrington (1997) reveal a correlation of 0.43 between the criminal behaviour of the research subjects and that of their fathers. Furthermore, children of delinquent research subjects had behavioural problems in 39 per cent of the cases. Children of non-delinquent research subjects had behavioural problems in only 20 per cent of the cases (Smith and Farrington 2004).

Aims of this Study

Although the earlier studies—the CSDD in particular—have made headway in understanding to what extent criminal behaviour is transmitted from one generation to the next, it remains important to establish the influence of criminal behaviour of parents on the criminal behaviour of their offspring once again. We will thereby extend the knowledge about the intergenerational transmission, as we will research the transmission within a longitudinal design. We claim to overcome shortcomings of previous research in the following ways: first, we use a much larger dataset. Second, we make use of a prospective and nationally representative dataset. Third, we add a non-criminal control group to the design. Furthermore, we extend the previous research question with a new one, allowing us to examine the influences of parents on the criminal behaviour of their offspring over the entire lifespan.

In order to examine these influences correctly, we will make use of state-of-the-art research methods. We will first examine whether criminal careers can be prospectively differentiated by the criminal history of the father. Subsequently, we will use group-based trajectory analysis and retrospectively identify distinct developmental offending trajectories of the children. This allows us to test whether the offending trajectories of the children resemble those of the fathers. This is of relevance, since, when analysing the criminal behaviour prospectively, also within the groups most at risk (those with a father who frequently commits delinquent acts), we always examine the average criminal career. Examining the intergenerational transmission of criminal behaviour both prospectively and retrospectively will give the most complete analysis possible. We will examine these questions in a new research setting, namely the Netherlands.

The following research questions will be addressed:

- (1) To what extent does intergenerational continuity in offending behaviour exist?
- (2) To what extent do criminal careers of children differ between those with non-criminal fathers and those with fathers belonging to a group of persistent recidivists?

Mechanisms of Intergenerational Transmission of Criminal Behaviour

Development and life-course criminology focuses on the description and explanation of the development of criminal behaviour over individual life courses. We state that several of these theories also apply to the intergenerational transmission of criminal behaviour. One can distinguish three ways of intergenerational criminal development in which one will easily recognize developmental and life-course theories (a.o. Blokland 2005).

First, we distinguish a group of theories proposing a *specific transmission*. These theories suggest a direct influence of the conviction itself. Then, we distinguish between two types of mechanisms of general transmission, in which criminal behaviour is seen as an expression of a more general behavioural pattern. A *general static transmission* focuses on a static, unchangeable transmission of all kinds of conduct problems. Finally, a *general dynamic transmission* means that all kinds of problems are transmitted, but numerous factors can interact with and change this transmission.

A *specific transmission* of convictions is due entirely because of the fact that the father commits delinquent acts. Theories which would predict a specific transmission are, for example, the Differential Association Theory (Sutherland *et al.* 1992). A father who commits delinquent acts teaches the skills, norms and values needed to display such anti-social behaviour. The more time a child spends with a criminal father, the larger the probability that the child will commit delinquent acts as well. A specific transmission can also come about because of the fact that parents and children commit delinquent acts collectively (a.o. Weerman 2001). Obviously, the influence on the number of convictions of a father on the number of convictions of his children will be very large in the case of collective offending. Theories proposing a *general static transmission* state that the transmission of criminal behaviour will take place very early in life and the tendency to commit crime will remain stable ever after. Biological theories, for example, would predict a general static transmission of criminal behaviour. According to biological theories, the causes for displaying criminal behaviour are saved in a specific combination of DNA. Research on twins shows that there exists more resemblance in criminal behaviour between mono-zygotic twins than between duo-zygotic twins (a.o. Kaufman and Zigler 1993). As genotypes are transmitted from one generation to another, tendencies to display anti-social (as well as socially desirable) behaviour are transmitted as well. Several psychological theories assume that not genetic factors, but personality is responsible for the general static transmission from fathers to their offspring. These personalities are formed in the childhood years and remain stable ever after. Some have a life-long stronger tendency to commit crime than others. An important example of such a psychological theory is the Self Control Theory (Gottfredson and Hirschi 1990). According to Gottfredson and Hirschi, insufficient self-control is caused by an unfortunate upbringing. Parents who do not consequently control, recognize and punish deviant behaviour of their young children cause a low level of self-control of their children. After childhood, this level of

self-control and its expressions through delinquent and anti-social behaviour remain stable.

Theories proposing a *general dynamic transmission* assume that changes in life circumstances can have large impacts on the transmission of criminal behaviour from one generation to the other. Divorce of the parents, for example, could moderate the transmission of criminal behaviour from fathers to their offspring (Juby and Farrington 2001). An important example of a dynamic theory is the Age Graded Theory of Informal Social Control (Sampson and Laub 1990). Also, sociological theories use the environment in which children are brought up as an explanation for the resemblance in criminal behaviour between fathers and their children. Resemblances in convictions are not the result of the criminal behaviour of the father, but of the poor social circumstances in which both father and child live. Changes in their living arrangements would improve or even deteriorate their chances of a delinquent lifestyle.

Testing the causal structures behind the resemblance in criminal behaviour of fathers and their children will remain outside the scope of this study. The three distinct theoretical concepts will, however, provide an excellent starting point for interpreting our findings and for future research.

Data and Operationalization

Sample

In order to answer our research questions empirically, we analyse data of the Criminal Career and Life Course Study (CCLS). This study was established by the Netherlands' Institute for the Study of Crime and Law Enforcement (NSCR). It contains information on representative sample of 4 per cent of all cases of criminal offences that were tried in the Netherlands in 1977 (cf. Nieuwebeerta and Blokland 2003; Blokland 2005). Extracts from the General Documentation Files (GDF) of the Criminal Record Office ('rap sheets') are used to construct entire criminal careers of these 4,615 research subjects (344 women and 4,271 men). This information is supplemented by population registration data on their entire life course up to 2003 (e.g. data on dates of marriages, fertility history and dates of deaths). Both criminal career and life-course information are available over their entire life course up to the year 2003. In this article, we only use data on the criminal careers of the 4,271 men.² Population registration data show that 3,590 of these 4,271 men had children, and that these fathers had, in total, 8,266 children, of which 6,952 had reached the age of 12 in 2003 (the end of our observation period).

The CCLS data are unique and fitted to study intergenerational transmission of crime. One disadvantage, however, is that all the men in the sample are convicted at least once, namely in 1977. Therefore, no comparison between children of non-criminal fathers and criminal fathers can be made. To overcome this limitation, we also collected data on a matched control group of 717 never-convicted men that have the same age distribution as men in the original CCLS sample. While searching military records for purposes that lay outside the scope of this article (see van Schellen and Nieuwebeerta 2007; Bersani *et al.* 2007), we were able to select a group of random Dutch men born on

²The restriction to men is necessary, as our control group also consist only of men, since these men were sampled from records of the Military Draft that was restricted to men.

exactly the same days as the men in the research group (van de Rakt and Nieuwbeerta 2005). As the military archives hold information of all men born in the Netherlands, sorted by birth year, we were able to select persons born on exactly the same days as our research subjects. Due to resource limitations, data-collection efforts were restricted to gathering information for one-fifth of the cases in the total sample. This resulted in a matched sample of 824 Dutch men having precisely the same ages as the research subjects. Since the aim of the control group is to have data on a group of persons who were not exposed to a certain stimulus (in this case, having a convicted father), the 107 out of the 824 control men from the group of representative Dutch men who committed a delinquent act do not meet the demand of our control group and are therefore excluded from the analyses. The matched control group is thus restricted to a total number of 717 control men, of whom 575 had children, and these 575 control fathers had, in total, 1,133 control children.

So, in total, we have 4,846 fathers (4,271 in the sample and 575 in the control group) and 8,085 children in our sample (6,952 from fathers in the sample and 1,133 in the control group).

Criminal-conviction data

The criminal careers of the offenders in the CCLS sample and their children were reconstructed using abstracts from the General Documentation Files (GDF) of the Criminal Record Office ('rap sheets'). The GDF contain information on every criminal case registered by the police at the Public Prosecutor's Office.³ These abstracts were supplemented with information that normally would not be mentioned due to periods of limitation. Specifically, in the Netherlands, a person is not given a 'blank sheet' upon becoming an adult. Therefore, the data used here contain information on both juvenile and adult offences. The standard classification system used in the Netherlands groups offences into the following categories: violent offences (i.e. sexual offences, robbery); property offences; vandalism and offences against the public order; drug offences; offences of the Firearms Act; and other criminal law offences (e.g. drunk driving, hit and run).⁴ Individual offending rates are measured annually, beginning when the offenders were 12 years of age (the minimum age of criminal responsibility in the Netherlands) up to the year 2002.

The data therefore contain information on both adult and juvenile offences (committed after the age of 12). The extracts from the GDF give information about only those crimes for which a criminal has been convicted. So, we only have information on offences that have been judicially proven. We also exclude non-criminal law offences (traffic and economic offences, for example). The criminal acts analysed in this paper are thus all criminal law offences, ranging from simple theft (e.g. shoplifting) to manslaughter and murder.

³While the GDF contain information on all offences that have led to any type of judicial interference, here, we use only information on those offences that were followed by either a conviction or a prosecutorial disposition.

⁴Given its prevalence, the sample for driving under the influence was confined to 2 per cent. Less common, serious offences were over-sampled, including: 25 per cent of all robbery, public violence and battery cases; 100 per cent of all cases involving murder (including attempts), offences against decency, rape, child molesting and other sexual assaults; and 17 per cent of all drug offences. Additionally, because the sample was one of cases, not people, offenders who had two or more adjudications in 1977 were more likely to be included in the study. In analysing the data, a weight factor is included so that the weighted sample represents the distribution of offence types and individuals as they were tried in 1977.

We stress the importance to treat all of our results with caution. With the use of official data, we are able to study the delinquent acts of a large number of parents and children in great detail. Also, we are able to study serious delinquent acts, which is usually not the case in self-report research. However, the nature of our data limits us to the analyses of delinquent acts for which a criminal is convicted and does not give any information about all criminal offences that did not lead to judicial interventions.

Fathers' conviction trajectories

Before we examine intergenerational transmission, we will first focus on the characteristics of the fathers' criminal careers, then we will describe the characteristics of the children's criminal careers and, finally, we will present some descriptive statistics on both fathers and children.

There are substantial differences across fathers. The fathers in the control group have—by definition—no convictions. Of the convicted fathers, 20.6 per cent have one conviction, 31.3 per cent two to five convictions, 26.2 per cent between six and 15 convictions and 21.9 per cent over 15.

The fathers cannot only be differentiated based on the number of convictions, but can also be distinguished based on the shapes of their longitudinal conviction trajectories. In order to do so, we use Nagin and Land's (1993) semi-parametric group-based modelling approach (see also Nagin 1999; 2005) and estimate a zero-inflated poisson form of a group-based trajectory model in which the natural logarithm of the number of convictions λ for persons j at age t , $\ln(\lambda_{jt})$, is specified to follow a cubic function of age (age, age² and age³). This analysis results in the identification of a number of different groups of individuals who display similar behavioural trajectories. Conceptually, this approach identifies groups of individuals who display similar behavioural trajectories (Nagin 2005). This analytic strategy is an advancement over the previous analysis in that rather than examining average trajectories, group-based trajectory analysis allows for a within-group examination of life-course offending trajectories—increasing our ability to isolate a life-course-persistent pathway.

Analyses of the CCLS data employing these semi-parametric group-based models show that four groups can be distinguished. We added a fifth group, consisting of control fathers. We will not discuss the model and the resulting groups in detail, because these have been discussed in depth in an article recently published by Blokland *et al.* (2005).⁵ Note that these analyses are done with all the convicted men in the research group. Among them are many who did not have children (see Table 3 as well).

We suffice by giving a brief description of the characteristics of the five trajectory groups. The first group consists of the Control Fathers (CF); these fathers did not commit offences. The second group (71 per cent) is called the Sporadic Offenders (SO). These men have committed one or only very few delinquent acts. A third group of men (22 per cent) consists of individuals who commit relatively few delinquent acts and who are especially active in adolescence. This group is called the Low-rate Desisters (LR-D). The fourth group of men (6 per cent) that we distinguish is called the Moderate-rate Desisters (MR-D). These persons commit relatively many delinquent acts, but tend to stop when they reach adulthood. The curves of the LR-D and the MR-D thus show a rise and decline in the number of convictions, resembling the familiar aggregated age–crime

⁵Note that these analyses also included 344 women, so the total number of cases was 4,615 persons.

TABLE 2 *Number of observed children on different ages*

<i>Age</i>	<i>All children</i>	<i>Sons</i>	<i>Daughters</i>
12	8085	4088	3997
20	6340	3200	3140
25	5045	2543	2505
30	4013	2030	1983
35	2984	1527	1457
39	1879	978	901

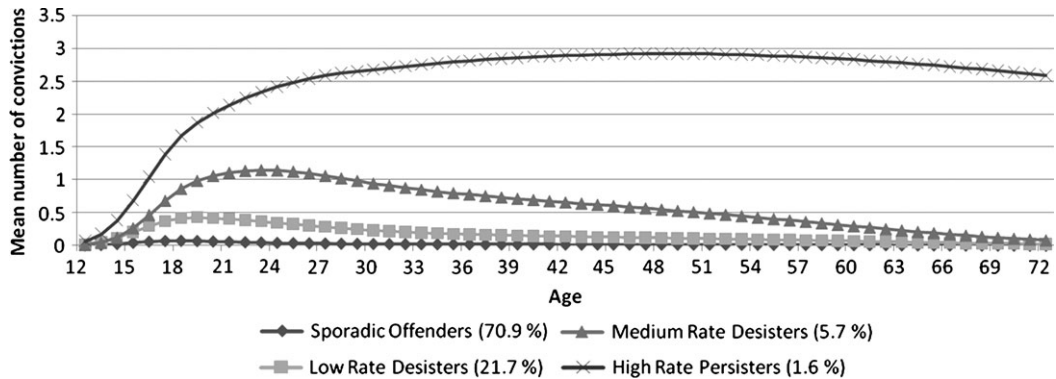


FIG. 1 Trajectories of the Convicted Men.

curve. Finally, we distinguish a fifth and last group of men (2 per cent of the sample). These men have very many convictions and keep on committing offences long after they have reached adulthood. We call them the High-Rate Persisters (HR-P). In Figure 1, we show the criminal careers of the four trajectory groups (CF are not shown).

Children's conviction trajectories

We will now focus on the characteristics of the criminal careers of the children. To analyse the convictions over the life course of the children, we created a person-period file of convictions. In this file, every line represents one year of each child, from their 12th birthday until their 39th. The person-period file for the entire sample consists of 136,326 years, of 8,085 children of 4,165 fathers (3,590 fathers in the sample and 575 control fathers). Not all of the children have reached the age of 40 in 2005. As some children are only 15 in 2005 while others are already 40, for some children, there are only a few lines in the person-period file, while, for others, there are lines for every year from their 12th until their 39th birthdays (see Table 2).

Figure 2 displays the children by age crime counts from ages 12 (the youngest age at which persons in the Netherlands get convictions under Penal Law) to 39 (the end of our observation period). This figure shows the actual mean probability of having a conviction for all crimes for boys and girls. There is a peaking in adolescence followed by a decline through middle adulthood, with eventual disappearance in the fifties. For the sons and daughters, the shapes of the mean trajectories are similar, with a peak in late adolescence and early adulthood. The number of convictions for sons is substantially higher than for

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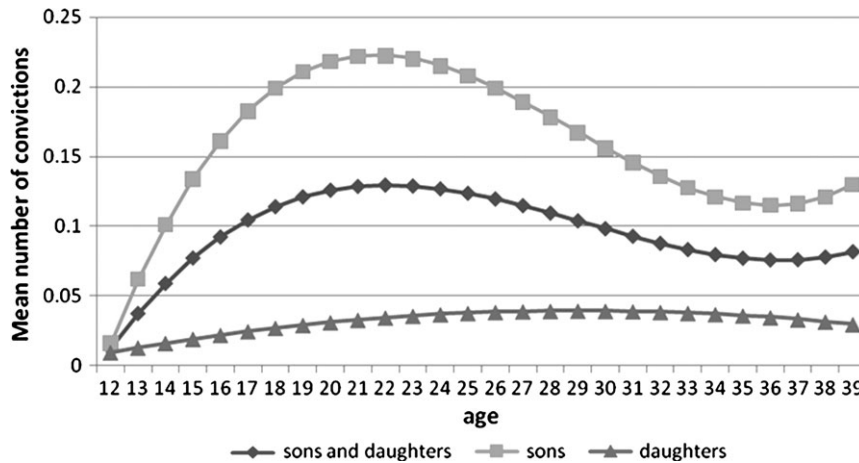


FIG. 2 Mean number of convictions children (sons and daughters) over their life course (N=8.085).

TABLE 3 Characteristics of research subjects, control persons and their children^a

	NOT CONVICTED		CONVICTED			Total
	Control fathers	Sporadic Offenders	LowRate-Desisters	Medium Rate-Desisters	High Rate-Persisters	
<i>FATHERS</i>						
Number of fathers	717	2237	1324	521	191	4271
Mean number of convictions	0.0	1.4	9.7	32.9	127.6	11.4
Mean age in 2003	53.6	55.7	53.3	53.1	50.7	53.9
% Ever married up to 50	84.3	81.9	81.4	71.5	62.6	73.6
# partners ^b	1.13	1.17	1.24	1.35	1.39	1.29
Number of fathers with children ^(a)	575	1736	914	280	85	3590
% of fathers with children	76.0	75.4	70.5	69.3	59.1	67.9
Mean age when 1 st child ^c	29.0	28.2	28.1	27.6	25.4	27.4
Mean # of Children per father ^c	2.37	2.33	2.50	2.23	2.40	2.37
% children out of wedlock	7.2	10.9	12.0	29.1	35.8	22.4
<i>CHILDREN</i>						
Number of children	1133	4073	2098	633	148	8065
Number of sons	606	2069	1015	324	74	4088
Number of daughters	555	1976	1083	309	74	3997
% sons ^c	53.6	54.5	52.3	51.5	51.5	52.0
Mean age of the children in 2003	24.9	27.4	28.4	25.4	26.8	27.0

*= p<0.05; **= p<0.01

^aVia F-tests (with means) and Chi2-tests (with percentages and counts) is tested whether differences were significant.

^bthe number of partners is calculated over the control and convicted persons that married at least once (N = 3126). The number of children is calculated over the control and convicted persons that had children (N = 4165).

(a): i.e. children older than 12 in 2003.

daughters. Also, the trajectory of daughters seems to be a bit flatter, as the trajectory for sons has a much sharper peak. It is to be noted that the graphs represent average children. There is substantial variation between children in age-crime trajectories.

Description of fathers and children

Table 3 presents descriptive statistics of the fathers and their children. Fathers are, on average, 54 years old in 2003 and committed 11.4 delinquent acts over their life course. As a father commits more delinquent acts, the chances are higher that he has never been married and never has had any children. But, as persistent delinquents get married, they get married more often (1.39 partners in the HR-P group and 1.13 in the Control group). Fathers with a more extensive criminal career (MR-D and HR-P) who do have children have them at a younger age than fathers who obey the law and also more often have children who are born out of wedlock.

The children of these fathers have a mean age of 27 years in 2003, with quite some variation. The youngest children are (through selection) 12, while the oldest are 67 years old.

Results: Intergenerational Resemblance of Criminal Behaviour

Our analyses are aimed to determine the degree of resemblance in criminal behaviour of fathers and their children. We will first examine whether criminal careers are prospectively related to the conviction trajectory group of their fathers. We differentiate between the five distinct trajectories over the life course of the fathers and analyse the delinquent life-course patterns of the children. Subsequently, we will use group-based trajectory analysis in order to *retrospectively* identify distinct developmental offending trajectories of the children. In this way, we will be able to distinguish persistent criminals among the children from sporadic offenders. This will again allow us to examine whether the offending trajectories of the children resemble those of the fathers. In this way, we will be able to examine whether the most persistent criminal children have the most persistent criminal fathers (or not). So, by examining the intergenerational transmission of criminal behaviour both prospectively and retrospectively, we aim to give the most complete analysis possible.

Prospectively defined groups

We start our prospective analysis by conducting an analysis in which the number of delinquent acts of the child is related to the trajectory group membership of the father (Table 4). Children of non-convicted fathers (control fathers) appear to have the fewest convictions (only in about 6 per cent of the cases). Children of fathers belonging to the Sporadic Offenders (SO), however, appear to have convictions more often (ranging from 12 to 35 per cent). Especially, children from fathers with persistent conviction trajectories (HR-P) have a very high chance of committing a high number of crimes themselves.⁶ Daughters have fewer convictions than sons, but the influence of their fathers' criminal behaviour on the number of offences seems to be alike for daughters and sons.

Our study continues by further analysing the predictability of long-term patterns of offending of children over the life course. Specifically, we examine whether trajectories of offending of children can be prospectively differentiated by trajectories

⁶These conclusions are confirmed by the results of a poisson regression analysis in which we control for the effects of the sex and the age of the children. (The results are not shown but are available from the first author.)

TABLE 4 *Relation between number of delinquent acts of fathers and the number of delinquent acts of children, sons and daughters*

	Control fathers	Sporadic Offenders	Low Rate-Desisters	Medium Rate-Desisters	High Rate-Persisters
NUMBER OF CONVICTIONS					
<i>Children</i>					
0 delinquent acts	93.4	76.1	67.5	59.4	62.2
1 delinquent act	3.6	8.7	10.3	8.8	11.5
2-5 delinquent acts	2.2	9.7	11.7	15.6	12.8
More than 5	0.8	5.5	10.4	16.1	13.5
N of children	1137	4073	2098	633	148
<i>Sons</i>					
0 delinquent acts	89.9	64.2	52.2	47.5	50.0
1 delinquent act	5.7	10.9	12.2	6.8	8.1
2-5 delinquent acts	3.4	15.1	17.2	18.5	17.6
More than 5	1.0	9.8	18.3	27.3	24.3
N of sons	593	2081	1015	324	74
<i>Daughters</i>					
0 delinquent acts	97.2	88.5	81.9	71.8	74.3
1 delinquent act	1.3	6.3	8.5	11.0	14.9
2-5 delinquent acts	0.9	4.1	6.6	12.6	8.1
More than 5	0.6	1.1	3.0	4.5	2.7
N of daughters	544	1992	1083	309	74

of their fathers. This allows us to investigate the second research question of our study, in which we study to what extent the criminal careers of children differ between those with non-criminal fathers and those with fathers belonging to a group of persistent recidivists.

To examine whether children’s trajectories of offending can be differentiated by fathers’ conviction patterns, we ran a series of predicted probabilities. We estimated hierarchical poisson regression models with three age terms (age, age² and age³) and present the findings for total criminal convictions at each age from 12 to 39.^{7,8}

Figure 3 presents the predicted probabilities for total criminal convictions of the children (sons and daughters) by the trajectory groups of their fathers. As the number of children from the HR-P-fathers is very small (see Table 4) and gets even smaller as children get older, we decided not to plot these patterns. The trajectories of the children of the four remaining groups are all shaped as typical age–crime curves. There do, however, exist large differences in the heights of the curves and more subtle differences in the shapes of the trajectories. Also, there exist numerous differences between the trajectories of sons and those of daughters. Note that the chances for daughters to commit delinquent acts are much smaller than the chances for sons. Children (both sons and daughters) of control fathers have the lowest likelihood of committing an

⁷We also graphed the raw data trajectories—the substantive findings did not change. Due to space considerations, we present only the smoothed trajectories based on the poisson regression models. The other figures are available from the first author upon request.

⁸We use hierarchical or multilevel models for nested or repeated data (Bryk and Raudenbusch 1992). Multilevel models have become widely used in the analysis of criminal careers (Horney *et al.* 2005; Blokland 2005; Laub and Sampson 2003). These models are especially suited for our analyses because the interdependence of the observations within individuals and within families is adjusted by taking into account the correlation of the error components at the different levels. We estimate the development of criminal behaviour over time on three levels: a year level (level 1), an individual level (level 2) and a family level (level 3).

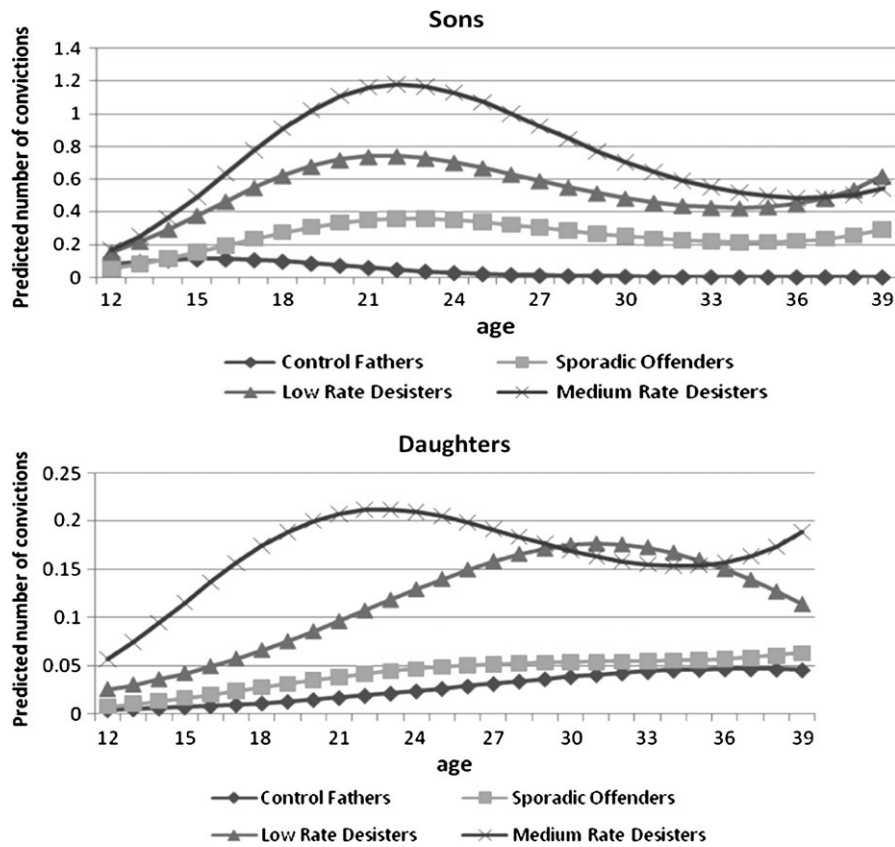


FIG. 3 Predicted number of convictions of children (sons and daughters) by fathers trajectory.

offence in every phase of their lives. Sons of control fathers seem to commit their sporadic offences early in life, while daughters of control fathers tend to commit more offences later in the life courses. Children of Sporadic Offenders (SO) commit more offences than children of control fathers, but their chances are still relatively low compared with the children from LR-D and MR-D fathers. Especially for daughters, curves of children of SO resemble those of children of control fathers. Children from fathers belonging to the LR-D and MR-D groups commit more offences in every phase of their lives. For sons, the peak in the criminal careers from children of LR-D and MR-D is much earlier than the peak of the children of control fathers and Sporadic Offenders. These sons thus not only commit more offences, but, on average, start at a relatively young age. Daughters from LR-D seem to peak late in life, while daughters from MR-D are more likely to peak early in life and remain relatively stable in committing offences at a moderately high level after the age of 30.

Retrospectively defined groups

Having determined the level of intergenerational transmission of criminal behaviour prospectively, we will also determine this retrospectively. To do so, we will employ a

group-based trajectory analysis in order to define children’s offending trajectories. The procedure is similar to the one used earlier in analysing fathers’ criminal trajectories. We decided to conduct a retrospective analysis in order to shed more light on those children who are very persistent in their criminal behaviour. Group-based trajectory analysis allows for a within-group examination of life-course offending trajectories—increasing our ability to isolate a life-course-persistent pathway.

So, again, we use Nagin and Land’s (1993) semi-parametric group-based modelling approach and estimate a zero-inflated poisson form of a group-based trajectory model in which the natural logarithm of the number of convictions λ for children j at age t , $\ln(\lambda_{jt})$, is specified to follow a cubic function of age (age, age² and age³). This analysis results in the identification of a number of different groups of children who display similar behavioural trajectories from 12 to 39 years of age. Our model selection analysis indicated that—similarly to analyses of the fathers—a four-group model provided a good representation of the conviction histories when considering parsimony and comprehensibility.

The mean trajectories of the four groups of children are shown in Figure 4. Group membership was determined based on the posterior probabilities. The first trajectory group—*non-delinquents* (ND)—is made up of nearly 74 per cent of the sample and evidences a zero conviction rate throughout adolescence and adulthood. A second trajectory group (17.5 per cent of the sample), labelled here *moderate desisters* (MD), follows a conviction rate trajectory that rises steadily through early adulthood and begins a declining pattern in the mid to late thirties. The third group—*early desisters* (ED)—follows the typical age–crime curve, with conviction rates peaking in early adulthood and declining steadily thereafter, and comprises 7 per cent of the sample. Finally, a group that we label *chronics* (CR) demonstrates a high rate of convictions throughout the twenties and thirties (1 per cent of the sample). This group begins a declining pattern in the late thirties.

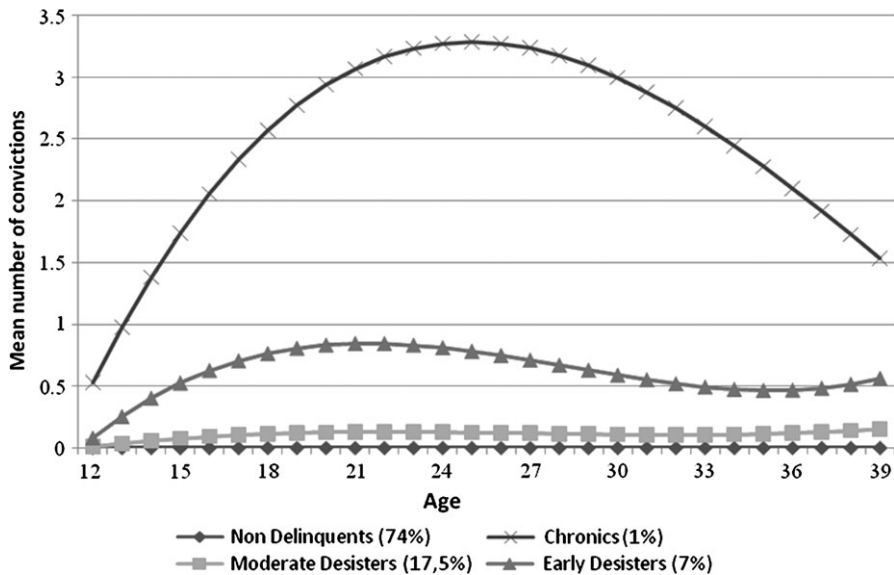


FIG. 4 Estimated trajectories of number of convictions per year of the children over the life course for four groups (N=8,085).

Table 5 displays the means for selected characteristics of criminal behaviour of the children. The table also displays the means for other important personal characteristics of the children. The results illustrate significant differences in the means across the four groups of children. Among the chronics and early desisters are a lot of boys and children who are born out of wedlock. Both measures of conviction patterns—early onset and number of convictions—evidence great differences. Specifically, the early desisters and chronics are more often characterized by early onset and chronic offending.

The final step in our analysis is a comparison between the trajectory group membership of the children with that of their parents. This answers our second research question. The results are presented in Table 6. There is a clear relationship between the conviction patterns of the fathers and those of their children. Children of fathers in the control group

TABLE 5 *Characteristics of children by their trajectory group^a*

	Non Delinquents	Moderate Desisters	Early Desisters	Chronics	Total
N. of children	5986	1411	600	88	8085
% of total	74%	17.5%	7.4%	1.1%	100%
% sons	42.6%	67.3%	85.3%	88.6%	50.6%
% born out of wedlock	16.9%	20.5%	26.3%	28.4%	18.3%
Mean number of convictions	0,0	2,1	10,4	40,3	1,6
Age of first conviction (for those convicted)	-	22,6	16,8	15,4	20,7

*p < 0.05; ** p < 0.01.

^aVia F-tests (with means) and Chi2-tests (with percentages and counts) is tested whether differences were significant.

TABLE 6 *Relation trajectory group membership of children and that of their father*

	Control Fathers	Sporadic Offenders	Low Rate- Desisters	Medium Rate- Desisters	High Rate- Persisters	Total
TRAJECTORY GROUP						
CHILDREN						
<i>Children</i>						
Non Delinquents	88.6	75.9	67.5	59.4	62.2	5986
Moderate Desisters	10.0	17.8	19.7	21.1	20.3	1411
Early Desisters	1.3	5.7	11.2	16.1	12.8	600
Chronics	.1	.6	1.6	3.3	4.7	88
N of children	1137	4073	2098	633	148	8085
<i>Sons</i>						
Non Delinquents	82.8	64.0	52.2	47.5	50.0	2548
Moderate Desisters	15.0	24.9	25.7	21.0	18.9	950
Early Desisters	2.1	9.9	19.2	25.6	23.0	512
Chronics	.0	1.2	2.9	5.9	8.1	78
N of sons	593	2081	1015	324	74	4088
<i>Daughters</i>						
Non Delinquents	95.0	88.4	81.9	71.8	74.3	3438
Moderate Desisters	4.5	10.2	14.0	21.4	21.6	461
Early Desisters	.4	1.3	3.7	6.1	2.7	88
Chronics	.2	.1	.4	.6	1.4	10
N of daughters	544	1992	1083	309	74	3997

predominantly belong to the non-delinquent trajectory group (88.6 per cent), whereas of the children of fathers in the High-rate Persistent (HR-P), only 62.2 per cent belong to this non-criminal group. These children have a relatively high chance of being classified into the Chronic Offenders (4.7 per cent). Girls much more often belong to the non-delinquent trajectory group, but, as a father belongs to a more persistent trajectory group, girls have—as have boys—a much higher chance of belonging to one of the other trajectory groups.

Discussion

This study identifies the relationship between the convictions of fathers and the development of convictions of their offspring over the lifespan. In order to place this research in a theoretical context and to understand the mechanisms behind the intergenerational transmission of crime—although without claiming conclusive tests—we proposed a theoretical framework with three distinct patterns of intergenerational transmission of offending. First, we claimed a specific transmission of criminal behaviour according to which the transmission of offending comes about through learning and offending collectively. Second, we distinguished a general static transmission. According to this view, criminal behaviour is transmitted from parents on their children very early in life through genes or upbringing and is stable ever after. Third, we described a general dynamic view, in which life-course changes and circumstances are of vital importance to the transmission of criminal behaviour.

We analysed a unique Dutch large-scale dataset describing the intergenerational transmission of criminal behaviour in order to provide answers to our research questions. Also, outside the Netherlands, this study, with 4,271 convicted men and their 6,952 children, 717 non-convicted men and their 1,133 children, is by far the largest dataset with which research in the tradition of the intergenerational transmission has been conducted. The dataset is also unique because it contains information on the criminal careers of both fathers and their children over three decades. Additionally, this research provides important insights into the influence of the pattern of delinquent acts of the father over the life course. It connects research from the tradition of intragenerational comparisons with the tradition of the intergenerational transmission. Results thus give insights into the transmission of convictions over the life cycle. Although this is a unique dataset, it does not provide a conclusive test for the theories presented in this article. We therefore cannot make any conclusion on which theoretical viewpoint is to be preferred. However, to give accurate answers to our questions, we performed trajectory modelling and growth-curve analysis to establish differences between the criminal careers of children from different groups of fathers as well as differences within the groups of children in the development of their individual criminal careers.

Our results confirm that the number of convictions of fathers relates substantially to the number of convictions of his children, as was already revealed by Farrington and others in the CSDD. The relation remains substantial, even after controlling for age and sex. The chance of a conviction is especially high among the children of fathers belonging to the Moderate-rate Desisters and the High Rate Persisters. Trajectories of children from control fathers and Sporadic Offenders are characterized by low offending chances throughout their life courses. Children from persistent criminals, however, tend to commit more delinquent acts in every phase of their life and start their delinquent behaviour at a much earlier stage in their lives. Our results further

show that within our group of 8,085 children, four groups of children can be distinguished, each with specific conviction trajectories. The first group consists of the vast majority of children (about 74 per cent) who do not commit any offence. The other groups are called *moderate desisters*, *early desisters* and *chronic offenders* and contain, respectively, 15, 7 and 1 per cent of the children. These groups do commit delinquent acts, ranging from one or two delinquent acts among the *moderate desisters* to a high number of delinquent acts (more than 15) among the *chronic offenders*. A final analysis combined the trajectory analyses of fathers and children and shows that having a father belonging to a more persistent trajectory group results in a higher chance of belonging to such a trajectory group as well.

Comparing our results with results from the studies in Table 1 in general and studies from the CSDD in particular leads to much similarity. In line with the studies of Table 1 and the CSDD, we also find large correlations between the delinquent acts of fathers and those of their children. Our relation is somewhat weaker than correlations reported by, for instance, Rowe and Farrington (1997). This could be explained by the differences in research design. We focus on fathers and their children (prospectively), while Rowe and Farrington report on criminal children and their fathers (retrospectively). As our research design is prospective and does not select upon the dependent variable (criminal behaviour of children), we believe our results to be more accurate. Another striking difference between our study and the previous one is that our study reports much more information about the development of criminal behaviour over the life course of children, while other studies focused on one time period only. Our study thus greatly improves previous research, giving insights into the development of criminal careers of children from fathers with different criminal life courses.

Finally, one should be very cautious while interpreting the results because of our use of official data. Although the data used in this paper are unique, since they stem from a large-scale, prospective, longitudinal study with a very long observation period, the data also have some limitations. As we only had access to official data, we probably have an underestimation of the total number of delinquent acts. Surely, many delinquent acts do not get known to the police. When this underestimation is non-selective, this will not interfere with the relations found in this study. It is likely that the probability of getting caught is not equal for all persons, since some (criminal) persons and families are more likely to be intensely monitored by the police than others, while others have smarter strategies to keep out of the arms of the law. Also, a major drawback of using official data solely is the absence of all sorts of useful control variables (such as socio-economic status, education and housing). Of course, these characteristics might affect the relations presented in this paper. These possible drawbacks force us to treat the conclusions of this study with great care and force us also to be reluctant with formulating policy implications, despite the fact that we have a high-quality large-scale dataset and that we have used state-of-the-art methods. Obviously, more research on the intergenerational transmission of criminal behaviour is needed.

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