

**PAPER****PSYCHIATRY**

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## The Intergenerational Cycle of Criminality— Association with Psychopathy\*

**ABSTRACT:** Preventive interventions early in life are likely to lower the risk of intergenerational transmission of criminal behavior. We investigated if psychopathy among homicidal offenders is associated with criminal offending among the offenders' offspring. The basic sample consisted of consecutive Finnish homicide offenders (during 1995–2004) who had been subjected to a forensic psychiatric examination and rated for a file-based PCL-R, and their offspring. Criminal behavior among both genders of the offspring was more common than in the general population. In general, the offspring's crimes against others (e.g., threat, intimidation, deprivation of freedom, breach of domicile) were associated with their parent's psychopathy. A grandfather's major mental disorder was associated with a high rate of crime committed by the offspring. Especially, the sons of male psychopathic homicidal offenders had the highest rate of committing crimes, which was often expressed as vandalism. However, both genders of offspring seem to require special preventive programs to ameliorate these problems.

**KEYWORDS:** forensic science, psychopathy, homicide, criminal offending, intergenerational transmission of criminality, Psychopathy Checklist-Revised

Childhood conduct disorders and youths' antisocial behaviors represent a significant societal concern and are the primary reasons for referral to child and adolescent mental health services. Previous studies have examined factors that are associated with youth antisocial behavior, such as parental antisocial behavior as well as genetic and temperamental vulnerabilities (e.g., [1,2]). The association between antisocial and criminal behaviors of biological parents and their offspring is well documented (3–5). Such findings form the basis of the intergenerational transmission hypothesis, which suggests that a specific vulnerability to develop antisocial behavior is genetically transmitted from parent to child (3,6). This association, which at best has been moderate, is more broadly considered to derive from both genetic and environmental interactions (2,3,7,8), yet the precise mediating factors remain unknown.

Psychopathy is defined as a constellation of affective, interpersonal, and behavioral characteristics that include impulsivity, shallow emotions, pathological lying, and the persistent violation of social norms and expectations (9–12). Impulsivity, which is one of the most prominent features of psychopathy, has been suggested to

be one of the mediating factors in the intergenerational transmission of antisocial behavior (13–15). This raises an interesting question on a possible association between parental psychopathy and a child's antisocial behavior. A related line of research has investigated the importance of genetic and environmental influences on psychopathic traits with a sample of twins (16–18), which suggests a strong genetic influence behind these psychopathic traits.

The risk of reoffending among psychopathic criminals is high, and no reducing psychosocial methods for adult psychopaths are known (12,19). For preventive purposes (20,21), it would be important and cost-effective to identify those who are at risk of psychopathic criminal behavior as early as possible. There are several neurobiological findings that suggest those with high psychopathic ratings may differ from the general population in their autonomic nervous responses (10,22–25), and perhaps even in their brain structure and neurological functions (24,26–30). Autonomic abnormalities have been suggested as biological mediators for transmitting antisocial behavior from fathers to sons (31). Finding autonomic abnormalities early enough would give the chance for psychosocial interventions to be applied in those cases where it is most needed. (32). From population and follow-up studies, several psychosocial factors have been identified that predict criminal offenses by the offspring (33–37). However, only some children under those risk circumstances grow up to become criminals (2). According to a controlled follow-up study, interventions with nurse home visitation during pregnancy and the first years of life have proved to reduce adolescent antisocial behavior and substance abuse among children of high-risk families (20). Early interventions have been found cost-effective among the children at highest risk (21). These findings are encouraging but the problems of identifying and recruiting these children and their families remain (21). Therefore, it is important to find additional measures for these putative biological mediators.

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The present study is the first, to the authors' knowledge, to examine the association between parent psychopathy and offspring criminality. Ethical permission for conducting the study was granted by the Finnish Ministry of Interior, the National Authority for Medicolegal Affairs, and the Finnish Population Register. The aim of this study was to find out how criminal offenses emerge among the offspring of homicidal offenders, and how it is associated with parental psychopathy.

## Methods

### *Sample*

During 1995–2004 a total of 1046 persons were prosecuted for committing a homicide in Finland (38), and 749 of these persons, 71% (96 women and 653 men), had been referred to a forensic psychiatric examination. Out of those who had been subjected to forensic psychiatric examination, 477 male (73.0%) and 93 female (96.9%) offenders were rated for a file-based Psychopathy Checklist–Revised (PCL-R).

In Finland, a forensic psychiatric examination is commonly administered as a part of the homicide investigation procedure. The forensic psychiatric examination includes a thorough family history (e.g., parents' alcoholism and mental disorders), which is obtained from first-degree relatives as well as from school, military, social, and healthcare records, in addition to any criminal reports in police records.

From the population of 570 offenders, only those offenders having at least one child who was not less than 15 years old by February 15th 2007 were included, as Finnish criminal records do not contain information on crimes committed before the age of 15. There were 253 such offenders. Among these, there were 189 cases in which the PCL-R had been rated. These 189 cases did not differ from the basic 570 cases with respect of the psychiatric diagnoses and the PCL-R scores.

### *Procedure*

The identifications of the offspring were received from the Finnish Population Register. The registered criminal offenses of the children (if  $\geq 15$  years old) were obtained from the Police Register. The police register information was used to form the following 12 variables: the number of each type of criminal offense among each parent's male and female offspring (murders and manslaughters, other violent offenses, robberies, thefts, other crimes against a person [e.g., threat, intimidation, deprivation of freedom, breach of domicile], pedophilic offenses, frauds and forgeries, arsons, traffic offenses, drug offenses, vandalism [e.g., possession of knives or illegal weapons in public places, crimes and offenses with weapons and explosives against property without human injuries]), and the earliest age at which the offspring started criminal offenses. The police register for information on the children of offenders was joined with the forensic psychiatric information of their parents, which included the PCL-R items.

The PCL-R (39) is a 20-item symptom rating scale of psychopathic personality disorder, where the lifetime presence of each item is scored on a three-point scale (0 absent, 1 possibly or partially present, 2 definitely present). Although PCL-R assessments should be based on both a review of file information and a semi-structured interview with the offender, research has consistently shown that assessments based solely on file information are highly similar to ratings that include an interview, if there is sufficient file information (40). The total score (ranging from 0 to 40) provides

an estimate of the extent to which a given individual matches the prototypical psychopath, and the two factor scores of the PCL-R reflect the interpersonal and affective features (factor 1) and the socially deviant features (factor 2) of psychopathy (39). In the present study, a cut-off score of 26 was used according to the recommendations for European populations (41). Also, categorisation into low (0–19.9), medium (20–20.9), and high (30–40) ratings was made, according to the adjusted sum of the PCL-R.

As a part of another study on psychopathy in Finnish homicide offenders, most of the above-mentioned forensic examination reports have been reviewed and scored for PCL-R by trained raters. The inter-rater reliability was verified in this setting after workshop attendance and several training sessions in the administration of the checklist. For a random sample of 20 cases the inter-rater agreement between altogether nine raters for the PCL-R total score was 0.89, for factor one 0.72 and for factor two 0.92.

### *Statistical Analyses*

The data was analyzed using the chi-square test and Fisher's exact test, the Spearman rank correlation, one-way analysis of variance (ANOVA), and independent-samples *t*-test for parametric variables. Findings concerning the descriptive and background data were considered significant if  $p < 0.05$ , and significant for findings as results of multiple comparisons if  $p < 0.005$ .

## Results

The total number of offenders' offspring who were at least 15 years old in this sample was 488, 119 for female offenders and 369 for male offenders. Of the studied offenders, a total of 53 were females (57.0%) and 187 were males (39.2%) with children who were older than 15 years ( $25.57 \pm 7.10$  years old). Of these children, 171 (35.0%) had been prosecuted for one or more criminal offenses. The information of the offspring's criminality was missing for 10 cases. Thus, the final data consisted of 179 (132 male and 47 female) violent offenders and their offspring.

### *Criminality Among the Offspring*

In total, 122 homicide offenders (48.2%) had children with a criminal history. This bore no association with gender; i.e., 50.9% of female homicide offenders and 51.6% of male homicide offenders had children with a criminal history. In total, 144 offenders (110 men and 34 women) had multiple offspring. Offenders with multiple children were more likely to have children with a criminal history (60.4% vs. 37.6%, respectively,  $\chi^2 = 11.742$ ,  $p < 0.001$ ). For 21.5% of the offenders with multiple children, over half of the children had a criminal history, and this finding was not statistically significant between parental genders.

The total number of criminal offenses in offspring was summed for each offender, regardless of the number of offspring. The mean ( $\pm$  SD) number of criminal offenses per one offender's offspring was 12.74 ( $\pm 24.16$ ). The offspring had for the time been prosecuted for a criminal offense at the average ( $\pm$  SD) age of 21.00 ( $\pm 6.84$ ) years. Neither age nor the number of offenses bore any significant relationship with the offender parent's gender.

Table 1 presents the number (%) of offenders (parents) with offspring for each type of criminal offense, with regard to offender gender. Female homicide offenders were significantly more likely to have offspring who had committed vandalism and crimes against persons. In total, 45.9% of the offenders had children who had committed one or more violent offenses.

TABLE 1—*Offspring offense type with regard to homicide offender parent's gender.*

Offspring's Offense Type	Father, n (%)	Mother, n (%)	p
Homicide	1 (1.1)	1 (3.7)	0.338
Other violent offense	41 (43.2)	12 (44.4)	0.905
Robbery	9 (9.5)	3 (11.1)	0.801
Theft	35 (36.8)	13 (48.1)	0.289
Fraud and forgery	40 (42.6)	9 (33.3)	0.390
Traffic	64 (67.4)	21 (77.8)	0.299
Drug	24 (25.3)	9 (33.3)	0.405
Arson	3 (3.2)		0.350
Vandalism	17 (17.9)	10 (37.0)	0.034
Crime against person	13 (13.7)	9 (33.3)	0.019
Sexual crime against a child	3 (4.1)	1 (4.3)	0.951

Chi-square test.

*Parental Psychopathy and Offspring Criminality*

Among these 179 (47 female and 132 male) PCL-rated offenders with at least one 15 year old offspring, the adjusted sum in the PCL-R did not differ between the sex of the offender ( $18.92 \pm 10.53$  for men and  $16.54 \pm 10.12$  for women). For nine of the female and 47 of the male offenders (19% and 29.6%, respectively, of the sample), the adjusted PCL-R score was  $\geq 26$ . By differentiating into three PCL-R categories, 100 offenders were assigned to the low, 45 offenders to the medium, and 34 offenders to the high psychopathy groups.

The proportions of homicide offenders that had any criminal offspring in these three psychopathy categories, or in the two groups received by using the 26 point cut-off score were not significantly different (Tables 2 and 3). As well, the total number of offenses committed by the offspring bore no significant relationship with parental psychopathy.

With regard to the offense type for the offspring and parental psychopathy, some trends towards significance emerged (Tables 2 and 3). The proportion of offenders having offspring with a history of offenses against a person was higher in the high psychopathy group, compared to medium and low psychopathy groups ( $p = 0.007$ ) (Table 2).

The offspring with higher parental psychopathy were prosecuted for a criminal offense at an earlier age than the offspring with

TABLE 2—*The numbers of offenders in three psychopathy groups (low, medium, high) and their numbers with criminal offspring of any type, and with different types of offspring crimes, and the offspring's age at first crime in the three parents' psychopathy groups.*

Offspring's Type of Crime	Offender Parent's Psychopathy			p
	Low, n = 100	Medium, n = 45	High, n = 34	
Any	47	24	20	0.456
Homicide	1	1	0	0.640
Other violent offense	21	11	11	0.407
Robbery	4	1	3	0.351
Theft	20	9	9	0.708
Fraud and/or forgery	20	10	10	0.523
Traffic	32	18	14	0.496
Drug	12	10	5	0.281
Arson	3	0	0	0.300
Vandalism	10	10	4	0.129
Crime against person	7	2	8	0.007
Pedophilic	3	0	0	0.300
Offspring age at first crime (years)	$22.19 \pm 7.86$	$19.15 \pm 5.74$	$18.75 \pm 5.00$	0.083*

Chi-square test.

\*t-test.

lower parental psychopathy. These differences, however, were not statistically significant (Tables 2 and 3).

Concerning the two factors (F1 and F2) of PCL-R, only two weak correlations were found: one between an offending parent's factor 2 and the number of an offspring's criminal offenses against another person (Spearman  $r = 0.236$ ,  $p = 0.027$ ), and a second between an offending parent's factor 2 and an offspring's early age at starting crimes ( $r = -0.226$ ,  $p = 0.034$ ). No correlations were found between PCL-R factor 1 and offspring criminality.

No significant differences were found when female and male offsprings were studied separately, in either case mentioned above.

*Family Risk Factors*

A grandfather's alcoholism was significantly associated with a younger age for starting crimes among both female and male offspring of parental offenders (i.e., for both granddaughters and grandsons). For female offspring with no alcoholic grandfather ( $n = 15$ ), the starting age of recorded criminality was  $22.68 \pm 7.00$  years, and for those with an alcoholic grandfather ( $n = 10$ ) the starting age of recorded criminality was  $16.68 \pm 2.12$  years ( $F = 6.889$ ,  $p = 0.015$ ). For male offspring with an alcoholic grandfather ( $n = 39$ ) the age onset for recorded criminality was  $20.04 \pm 6.92$  years, and for those with no alcoholic grandfather ( $n = 41$ )  $23.29 \pm 6.84$  years ( $F = 4.443$ ,  $p = 0.038$ ).

A grandmother's alcoholism was significantly associated with female offspring's younger onset of recorded criminal behavior:  $17.51 \pm 2.38$  years for those with an alcoholic grandmother ( $n = 12$ ), and  $22.67 \pm 7.31$  years for those with no alcoholic grandmother ( $n = 66$ ,  $F = 5.814$ ,  $p = 0.018$ ).

A grandfather's major mental disorder was highly associated with the number of offspring crimes ( $35.00 \pm 46.16$  vs.  $7.82 \pm 14.27$ ,  $F = 11.911$ ,  $p = 0.001$ , one-way ANOVA). The information of a grandfather's mental disorder had been obtained in 72 cases, where six offender parents had a father with a major mental disorder and 66 had not.

*Male Homicidal Offenders and Their Offspring*

High psychopathy in male offenders was significantly associated with male offspring's history of vandalistic crimes. Those male offenders who had high points in PCL-R significantly more often

TABLE 3—*The numbers of offenders in two psychopathy groups (cut-point 26), their numbers with criminal offspring of any type, and in different types of offspring criminality, and the offspring's age at first crime.*

Offspring's Type of Crime	Offender Parent's Psychopathy		
	Low, n = 127	High, n = 52	p
Any	63	28	0.363
Homicide	2	0	0.502
Other violent offense	29	14	0.345
Robbery	4	4	0.172
Theft	26	12	0.420
Fraud and/or forgery	24	16	0.065
Traffic	45	19	0.510
Drug	17	10	0.220
Arson	3	0	0.355
Vandalism	17	7	0.581
Crime against person	8	9	0.026
Pedophilic	3	0	0.355
Offspring age at first crime (years)	$21.63 \pm 7.56$	$18.40 \pm 4.58$	0.039*

Chi-square test.

\*t-test.

had sons with a history of vandalistic crimes when compared to those who rated medium or low in the PCL-R ( $F = 6.266$ ,  $p = 0.003$ , one-way ANOVA, Bonferroni). No significance was found in comparisons concerning the other offense types or female offspring having paternal psychopathy.

## Discussion

The aim of this study was to determine the frequencies of different crimes among offspring of homicidal offenders, and to clarify if PCL-R gives new opportunities to identify homicidal offenders' offspring who may be at high risk of criminal offending. Identifying such high-risk populations is a prerequisite for planning special programs for these offspring (e.g., [20]). As many as one half of Finnish homicide offenders had offspring with a criminal history, and 45% had offspring with a history of violent criminal behavior. Homicides that are committed by offspring of violent offenders were rare in this study, perhaps because they had not yet had time to emerge since the average age of these offspring was  $25.57 \pm 7.10$  years, and most Finnish homicides are committed by people who are between 30 and 50 years of age (38).

The strongest association in the present study emerged between a male homicide offender parent's psychopathy and his male offspring's criminality of vandalism. This finding is in line with both classic (4,5) and more recent findings (34,42), which might be explained by the genetic transmission of physiological vulnerabilities (6,31) or transmission of impulsive temperament (13–15), or both. A grandfather's major mental disorder seems to add to the risk of criminality, and a grandparent's alcoholism seems to make criminal behavior start earlier. The greatest risk mediating factor might be alcohol abuse, as it was recently suggested in a study concerning the transmission of violent offending behavior across three generations (43). Impulsivity is also a well-known feature of type 2 alcoholic male offenders in Finland (44,45).

It is estimated that in Finland 1.2 out of 4.4 million people aged 15 years or older have been prosecuted for any crime, which means 28% of the general population. This estimate is based on a finding that concerns the history of criminal sentences during 1977–2005 of the Finnish birth cohort from the year 1963 (Kallio J, Statistics Finland, personal communication). The proportion is higher among the present selected population; i.e., 35% of the ( $\geq 15$  years old) offspring of these Finnish homicide offenders had been prosecuted for a crime. This finding is in line with the recently reported criminal risk of 36% among the offspring of Finnish homicide recidivists (46). The percentage of offspring with a criminal history was as high as 60% among offender parents with multiple children, regardless of the offender parent's gender. Of course, the risk is compounded with the number of children; however, a family with several children is not known to have a doubled risk as compared with the general population. It is likely that these children suffer from many kinds of psychosocial risk factors in addition to their putative genetic vulnerabilities.

The present PCL-R factor findings are weak but support previous findings on the transmission of antisocial behavior from fathers to sons (4,7,15). Associations between parents' PCL-R and their offspring's criminality were limited to factor 2. Factor 2 of the PCL-R includes the following items: a need for stimulation, parasitic lifestyle, poor behavioral controls, early behavioral problems, a lack of realistic long-term goals, impulsivity, irresponsibility, juvenile delinquency, and revocation of conditional release after sentencing. These items contain almost equal information with the criteria for antisocial personality disorder (47). Factor 1, which includes the items of glibness, grandiose sense of self worth, pathological lying,

conning/manipulative, lack of remorse, or guilt, shallow affect, callous/lack of empathy, and failure to accept responsibility for one's own actions, has been suggested to be the core of psychopathy (11). In the present findings, no associations between factor 1 and the criminal behavior of the offspring were found. This apparent lack of correlation may mean that a predisposition towards the characteristics of "core psychopathy" is not inherited to the same extent as antisocial personality disorder, or factor 2 characteristics.

A grandparent's major mental disorder and alcoholism may represent both environmental and genetic loading towards disturbed and criminal behavior within their families, and in this case among their grandchildren. Such severe psychiatric disorders may mean that the offspring lives without a proper or functional family supported network in the typical life situation when her/his parent has been sentenced for committing a homicide. However, in this study context, neither the time aspects nor the living circumstances were investigated, and it is not known if any environmental loading existed in this respect.

In spite of comprehensive Finnish registers, and in spite of the fact that this study sample is representative of Finnish homicide offenders, there are some considerable limitations in the present material. First, psychopathic individuals, and especially men, may have children who are not registered as their own children and, therefore, all of their children may not be found. Second, the number of individuals with high psychopathy remains small ( $n = 56$ ). However, it seems that the number of "real psychopaths" among Finnish homicide offenders is not higher. Third, a longer follow-up time is needed to recognize the real risk for severe criminal offenses of the offspring. Lastly, it is impossible to know exactly when criminal behavior actually begins in an individual, and likely precedes the record of criminal prosecution. In this study material, the offending parent's average age during the index criminal offense in 1994–2004 was  $42.2 \pm 9.7$  years. Therefore, many of their children were not yet even 15 years old. Moreover, it is almost impossible to know whether or not a child lives with her or his antisocial biological parents—and especially the father—for significant periods if she or he is not officially removed from the biological parent(s). Therefore, it is not possible to suggest from this study to what extent criminality may be influenced by genetic inheritance or environment.

In conclusion, parental homicide is associated with a high risk of criminal behavior of offspring from both genders when compared to the general population. In addition, crimes against another person that are committed by the offspring of an offender are associated with a parent's psychopathy. Somewhat surprisingly, the offspring's criminality was just as common among female as among male homicide offenders. The findings concerning female offenders' offspring and female offspring's criminality suggest that the importance of the mother's criminal history and psychopathy, and the daughters of psychopaths, must not be forgotten when measures of high-risk children are considered. However, men still commit most crimes and therefore children are more likely to be at risk by exposure through their fathers. However, sons of psychopathic homicide offending fathers are at the highest risk of committing crimes, which is seen in this data as vandalism, and therefore forms the most critical group to receive special preventive programs during the first years of life.

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