Driving Under the Influence of Our Fathers*

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Abstract

This paper uses data from the Stockholm Birth Cohort Study to document intergenerational associations in drunk driving between fathers and their children. The proportion of sons with a record of drunk driving is 2.3 times larger for sons whose fathers have a conviction for drunk driving than for sons whose fathers have not been convicted. For daughters, the proportion is 7.8 times larger. The average number of convictions is twice as large for sons whose fathers have a conviction for drunk driving than for sons whose fathers have not been convicted. For daughters, the average number of convictions is 15.3 times larger. We argue that these intergenerational associations in drunk driving have important implications for treatment strategies and public policy.

Keywords: alcohol, crime, drunk driving, illegal behavior, intergenerational crime, intergenerational mobility, risky behavior.

JEL codes: J62, K42.

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1. Introduction

In 2005 nearly 1.4 million drivers were arrested in the United States for driving under the influence of alcohol or narcotics (Department of Justice, 2006). That same year 16,885 people died in alcohol-related motor vehicle crashes, which constitutes 39 percent of all traffic-related deaths in the United States (NHTSA, 2007). The total cost, above and beyond human suffering, has been estimated at $51 billion per year (Blincoe et al., 2002). Drunk driving is not a problem unique to the United States. In a recent World Health Organization study, Anderson and Baumberg (2006) estimated that more than 30 percent of all road traffic fatalities in the European Union were due to alcohol.

Consequently, governments have implemented a number of laws to curb the incidence of drinking and driving, including zero tolerance laws, beer taxes, regulating the drinking age, lowering blood alcohol content (BAC) levels, and sanctions (ranging from losing one’s license to incarceration). Evaluations of these policies generally yield a strong, evidence-based consensus in favor of the view that restricting access to alcohol, raising prices, and increasing penalties do in fact lower alcohol consumption and decrease episodes of drunk driving, particularly among youth (Cook, 2007).

In this paper we aim to provide new insight into the source of this costly, dangerous behavior by using an alternative approach. In particular, we examine this important social and economic problem from an intergenerational perspective. A better understanding of the family’s contribution to this behavior could be used to inform public policy and to aid practitioners in designing improved treatments. A strong intergenerational correlation implies that practitioners have a large group of potential offenders at their fingertips. When a father comes in for treatment, the practitioner could utilize ways of including older teenage children in at least part of the father’s treatment program. Alternatively, the practitioner could provide counseling to these children or provide them with information about the causes and consequences of driving drunk. By making these children aware of the fact that their own father was convicted of drunk driving and by signaling that this is not acceptable behavior, children would most likely update their beliefs about the probability and costs of getting caught, providing potential deterrence to driving drunk.

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1 This number represents less than 1 percent of the self-reported episodes of alcohol-impaired driving among U.S. adults each year (Quinlan et al., 2005).

2 For instance, studies evaluating 0.08 BAC laws include Dee (2001), Eisenberg (2003), Freeman (2007), Cox (2006), and Carpenter and Harris (2005); however, not all of these studies conclude that 0.08 BAC laws are effective. A number of studies find beer taxes (Carpenter et al., 2007) or crash deaths (Ruhm, 1996) to be effective policy instruments in reducing youth drinking participation. Carpenter and Dobkin (2009) provide recent strong support for the hypothesis that higher minimum legal drinking ages lower alcohol-related traffic fatalities.
The existence of intergenerational drunk driving correlations may also have important implications for cost-benefit analyses of public policies aimed at treating or deterring drunk driving. The true, long-run benefits of such policies (e.g., alcohol taxes or treatment programs) may be underestimated if they do not take into account this second-generation effect, particularly if the mechanisms underlying this intergenerational link are behavioral in nature.

Extensive research has been done on intergenerational patterns of alcohol use and abuse. These behaviors are indeed correlated across generations. Estimates of the increased risk of becoming an alcoholic faced by children of alcoholics range from 4:1 to 9:1 (Windle, 1997). Recent work by Dohmen et al. (2006) provides evidence suggesting that an individual’s willingness to take risks in different situations is determined to a large degree by his or her parents. One example highlighted in their study is an individual’s willingness to take risks while driving a car.

Other researchers have examined the intergenerational transference of antisocial behavior, including conduct disorders, antisocial personality disorder, attention-deficit/hyperactivity disorder, oppositional defiant disorder, aggression, violence, child abuse, juvenile delinquency, and crime. This literature finds strong family patterns in antisocial and criminal behavior. For example, Duncan et al. (2005) report parent-child correlations in a wide array of behaviors, attitudes, and outcomes, both good and bad. They find striking evidence in support of the hypothesis that “like begets like” across generations.

This paper contributes to knowledge about the determinants of drunk driving behavior. We document the existence and magnitude of intergenerational drunk driving behavior. Although a large literature has studied different aspects of drunk driving and a large literature has evaluated preventative policy measures, we have not found any previous research that deals explicitly with correlations in drunk driving between parents and their children. We suspect that this omission in the literature is largely due to the unusual difficulty posed by the need to obtain individual-level data on drunk driving for at least two generations within the same family. The current paper investigates the intergenerational drunk driving

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3 A note to other economists: as pointed out by Kenneth Sher (in De Ribeaux, 1997), one of the first public discussions concerning the quantitative importance of this intergenerational link was the debate between John Maynard Keynes and the psychologist/statistician Karl Pearson concerning the extent to which children of alcoholics suffered from intellectual deficits.

4 See Blazei et al. (2006) for an excellent review of the applied psychology literature. In Hjalmarsson and Lindquist (2010) we studied intergenerational criminal correlations and their underlying mechanisms using data from the Stockholm Birth Cohort Study. Other examples of studies on intergenerational crime include Farrington et al. (2009) and van de Rakt et al. (2009), both published in a special issue of the Journal of Criminal Behavior and Mental Health focusing on the intergenerational transmission of antisocial behavior. Mazumder (2008) studies brother correlations in various outcomes, including illegal drug use and time spent in jail.
correlation by using data from The Stockholm Birth Cohort Study, which consists of 15,117 individuals born in 1953 and who were living in the greater Stockholm metropolitan area in 1963. Most importantly, the data contain drunk driving records of both the birth cohort and their fathers.5

We find strong evidence of an intergenerational drunk driving relationship. The proportion of sons with a record of drunk driving is 2.3 times larger for those sons whose fathers have had a conviction for drunk driving than for those sons whose fathers have not been convicted. For daughters the proportion is 7.8 times larger. The average number of convictions is 2 times larger for sons whose fathers have had a conviction for drunk driving than for sons whose fathers have not been convicted. For daughters the average number of convictions is 15.3 times larger.

The remainder of this paper is organized as follows. Section 2 describes the Stockholm Birth Cohort data. Section 3 documents a set of intergenerational associations in drunk driving. Robustness checks are presented in Section 4. Section 5 concludes.

2. Data

Our data come from the Stockholm Birth Cohort Study, which was created in 2004/2005 by means of a probability matching of two previously existing longitudinal datasets.6 The first is the Stockholm Metropolitan Study, which consists of all children born in 1953 who were living in the Stockholm metropolitan area on November 1, 1963. The second is The Swedish Work and Mortality Database.

The work in this paper is based solely on data from the original Stockholm Metropolitan Study, which consists of 15,117 individuals: 7,719 men and 7,398 women. Our data cover the entire birth cohort and are in no way affected by the

5 Sweden was the second country in the world (after Norway) to criminalize drunk driving (BRÅ, 1995). Even though Sweden has a relatively low frequency of reported and convicted drunk drivers (320 per 100,000 persons; BRÅ, 2007) by international standards, drunk driving is still considered to be a major social problem. Between 25 and 40 percent of all traffic deaths each year are alcohol related (Vägverket, 2003, 2008), a figure comparable to the U.S. figure of 39 percent. In a systematic trial study undertaken in three of Sweden’s 21 counties, police found that 0.24 percent of all tested drivers had blood alcohol levels above the Swedish legal limit (VTI, 2007). Previous studies had measured hit rates of about 0.20 percent (Vägverket, 2008).

6 Carl-Gunnar Janson and Sten-Åke Stenberg managed and provided the original cohort data, Denny Vågerö organized the follow-up data, and Reidar Österman managed the probability matching of the two data sets. Preparing data from the Stockholm Birth Cohort Study is an ongoing collaborative effort by the Swedish Institute for Social Research and by the Centre for Health Equity Studies, partly financed by the Swedish Research Council. For a complete description of the project and data set see Stenberg and Vågerö (2006) and Stenberg et al. (2007). Codebooks describing all of the data are available at http://www.stockholmbirthcohort.su.se/.
matching procedure used to create the Stockholm Birth Cohort Study. The most important feature of the Stockholm Metropolitan data is that it contains drunk driving records of both the birth cohort and their fathers.\(^7\)

The drunk driving variables come from two sources: the national police register and the social registers held by each municipality in the greater Stockholm metropolitan area. Each municipality in Sweden maintains its own social register, which is comprised of dossiers for families and individuals that have received help from the local social services for any reason. These dossiers also include information concerning Child Welfare Committee cases, and include information on drunk driving of both parents and their children.

Records concerning parents’ drunk driving were most likely kept in the social register for two reasons. First, the Child Welfare Committees collected information on negative parental behavior in order to monitor the welfare of the children in the home. Second, convictions for drunk driving at this time rarely led to jail sentences but normally resulted in probation, fines, or? some form of mandatory treatment program. This treatment was supplied by the local social services, which kept track of treatment provided to parents.

For the cohort members (sons and daughters), the national police register contains records of offenses that led to an official report to the Child Welfare Committees or to a court conviction. For each year from 1966 to the first half of 1984 (i.e., when the cohort members were ages 13 through 31), our data include information on the number of drunk driving offenses as well as the sentence received by each cohort member.\(^8\)

The social registers also contain drunk driving records for the period when the cohort members were juveniles (ages 13 – 19).\(^9\) However, social registers outside of the Stockholm metropolitan area were not searched. This means that cohort members cannot appear in the register until they have moved into the area and that they disappear from this register once they leave the municipality. Of the

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\(^7\) In the original Stockholm Metropolitan Study, fathers were identified using three sources: (1) the 1964 national register of population and income, (2) information from the parish register’s office from 1953, and (3) interviews with the cohort members’ mothers. The primary goal was to collect information on “rearing” or “social” fathers; hence fathers may be biological, adoptive, or stepfathers.

\(^8\) In 1941 two categories of drunk driving were established: drunk driving and aggravated drunk driving. The blood alcohol levels for these two crimes were set at 0.08% and 0.15% respectively. In 1957 the blood alcohol level for the lesser of these two offenses was lowered to 0.05%. Post-1990 blood levels do not apply to our data since they end in 1984.

\(^9\) There is considerable overlap between reports of drunk driving by cohort members under age 20 in the social register and in the police register, mainly due to the fact that the police were obliged to report such incidents to the local Child Welfare Committees. They were not, however, obliged to proceed to the courts to obtain a conviction. Thus a juvenile may appear in the social register but not in the police register. We use the combination of these two sources in order to measure juvenile drunk driving.
15,117 cohort members, 1,373 boys and 1,353 girls (i.e., 18 percent of the birth cohort) were not born in the area, but rather moved into the area some time before November 1, 1963. Also, by November 1, 1970, 503 boys and 444 girls (i.e., 6 percent of the birth cohort) had left the area. For these individuals data from the social register are (potentially) censured. However, data from the national police register are not censured in this manner since it is a nationwide register.10

We use these two sources of information (the national police register and the local social register) to construct four measures of drunk driving for cohort members (sons and daughters). The first variable, Any juvenile drunk driving, is a measure of the extensive margin that is equal to one if the son or daughter has a record of drunk driving between ages 13 and 19 in either the national police register or the local social register. The second variable, Any adult drunk driving, measures the extensive margin between ages 20 and 31 and is taken solely from the national police register. The third variable, Number of drunk driving convictions, is an intensive margin measure of drunk driving for sons and daughters; it measures the number of drunk driving convictions at any age in the police register. The fourth variable, Any drunk driving, is an extensive margin measure that is equal to one if the cohort member has a record of drunk driving at any age in either the social register or the police register (i.e., the union of Any juvenile drunk driving and Any adult drunk driving).

The social register also contains reports of drunk driving for both fathers and mothers. We use this information to create two variables: Mother drunk driving and Father drunk driving 1. Both are extensive margin variables that are equal to one if the mother or the father has a record of drunk driving in the social register. Both variables pertain to the time period 1953-1972, i.e., when cohort members were between the ages of 0 and 19.

We have a second measure of drunk and/or dangerous driving for fathers, taken directly from the national police register.11 We use this information to create a second extensive margin measure of fathers’ drunk driving, Father drunk driving 2, that is equal to one if the father has a conviction for drunk or dangerous

10 The 947 individuals who were not living in the Stockholm area on November 1, 1970, were previously identified according to the “project address book.” This address book has since been de-identified, however, and a record of these movers has not been maintained. Thus the best we can do to identify the movers is to consider those not living in the Stockholm area according to the 1970 census, which is conducted throughout the year (i.e., not just in November). We identify 859 individuals (461 males and 398 females) who left Stockholm. These individuals, however, do not appear to be systematically different from those who stayed in terms of their drunk driving records in the national police register (at both the extensive and intensive margins) and their father’s records.

11The Stockholm Birth Cohort data do not include records on mothers’ criminality or drunk driving from the national police register.
driving between 1941 and 1972, i.e., from the period before cohort members were born until they turn 19.

Unfortunately, the variable *Father drunk driving 2* is the sum of a father’s convictions for drunk driving and other serious traffic offenses. Thus we do not know exactly how many of his traffic convictions contained in the national police register pertain to drunk driving and how many pertain to other types of serious traffic offenses.\(^{12}\) Because of this we have chosen to use the cleaner measure of fathers’ drunk driving, *Father drunk driving 1*, taken from the social register, as our preferred measure of fathers’ drunk driving. This is the variable that we use in our baseline estimates. We have also created a third variable, *Father drunk driving 3*, which is the union of *Father drunk driving 1* and *Father drunk driving 2*.

### 2.1 Descriptive Statistics

Table 1 displays descriptive statistics for male and female cohort members and their parents. Drunk driving is much more prevalent among males than females, as is evident when comparing the males and females of the birth cohort as well as fathers and mothers: 8.1 percent of the sons have at least one conviction for drunk driving in either the social register or official police register at any age (*Any drunk driving*). Of these 613 sons, the average number of offenses is 1.59. In contrast, just 33 daughters (0.5 percent) have been convicted an average of 1.61 times.

These gender differences persist when separating out drunk driving as an adult (age 20 or older), *Any adult drunk driving*, versus a juvenile (age 19 or younger), *Any juvenile drunk driving*. In the sons, 6.1 and 3.0 percent have a record of drunk driving as an adult and juvenile respectively, while just 0.4 and 0.1 percent of daughters have such a record. The large percentage of young sons is particularly striking given that drivers in Sweden do not receive their license until age 18 at the earliest.

The gender differences observed among the cohort members are consistent with differences seen for the parents. Mothers have almost no occurrences of drunk driving (*Mother drunk driving*), while 1.7 percent of the fathers have a record of drunk driving between 1953 and 1972 recorded in the social register (*Father drunk driving 1*). In the fathers, 3.6 percent have a record of drunk and/or dangerous driving in the official police register between 1941 and 1972 (*Father drunk driving 2*). If we combine the information from the social and police

\(^{12}\) We will, however, still make use of this information as a sensitivity check. This is motivated in part by Levitt and Porter’s (2001) finding that people with bad driving records are more likely to drive drunk and more likely to have fatal accidents than other drunk drivers. Thus this variable may still include valuable information about fathers who are more likely than others to drive after drinking despite the fact that it is not a clean measure of drunk driving.
Table 1. Descriptive Statistics.

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Definition</th>
<th>Data Source</th>
<th>Mean (s.d.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Sons (n=7719)</td>
<td>Daughters (n=7398)</td>
</tr>
<tr>
<td><strong>Offspring Drunk Driving Variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any juvenile drunk driving</td>
<td>1 if any drunk driving convictions when age is less than 20</td>
<td>Police or Social register</td>
<td>0.030 (0.170)</td>
</tr>
<tr>
<td>Any adult drunk driving</td>
<td>1 if any drunk driving convictions when age 20 or older</td>
<td>Police register</td>
<td>0.061 (0.239)</td>
</tr>
<tr>
<td>Any drunk driving</td>
<td>1 if Any juvenile drunk driving = 1 or Any adult drunk driving = 1</td>
<td>Police or Social register</td>
<td>0.081 (0.273)</td>
</tr>
<tr>
<td>Number of drunk driving convictions</td>
<td>Number of drunk driving convictions in the police register at any age</td>
<td>Police register</td>
<td>0.126 (0.594)</td>
</tr>
<tr>
<td><strong>Parental Drunk Driving Variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mom drunk driving</td>
<td>1 if mother convicted of drunk driving 1953-72 (i.e., when child is age 0-19)</td>
<td>Social register</td>
<td>0.000 (0.011)</td>
</tr>
<tr>
<td>Dad drunk driving 1</td>
<td>1 if father convicted of drunk driving 1953-72 (i.e., when child is age 0-19)</td>
<td>Social register</td>
<td>0.016 (0.124)</td>
</tr>
<tr>
<td>Dad drunk driving 2</td>
<td>1 if father convicted of drunk and/or dangerous driving 1941-72 in the official police register</td>
<td>Police register</td>
<td>0.032 (0.175)</td>
</tr>
<tr>
<td>Dad drunk driving 3</td>
<td>1 if Dad drunk driving 1 = 1 or Dad drunk driving 2 = 1</td>
<td>Social or Police register</td>
<td>0.038 (0.192)</td>
</tr>
</tbody>
</table>
registers, then we find that 4.2 percent of fathers have a conviction for drunk and/or dangerous driving between 1941 and 1972 (Father drunk driving 3).

The first measure of paternal drunk driving (Father drunk driving 1), which only includes drunk driving, is used throughout the analysis and robustness checks are conducted with the latter two measures. Because of the gender differences observed in Table 1, our analysis is conducted separately for sons and daughters. In addition, the analysis focuses on the drunk driving behavior of fathers rather than that of both parents.

3. Intergenerational Associations in Drunk Driving

Column (1) in row (1) of Table 2 presents the proportion of sons with a record of drunk driving in either the social register or the police register (Any drunk driving). Columns (2) and (3) show the proportion of these sons with and without fathers who have a record of drunk driving in the social register (Father drunk driving 1). The proportions of sons with records of drunk driving are 0.182 and 0.079 respectively. The estimated difference between these proportions is shown in column (4): 0.102 with a standard error of 0.035. The proportion of sons with a record of drunk driving is 2.3 times larger for those whose fathers have a conviction for drunk driving than for those whose fathers have not been convicted.

Column (5) in row (1) of Table 2 presents the proportion of daughters with records of drunk driving in either the social register or the police register (Any drunk driving). Columns (6) and (7) show the proportion of these daughters with and without fathers who have a record of drunk driving in the social register (Father drunk driving 1). The proportions of daughters with records of drunk driving are 0.031 and 0.004 respectively. The estimated difference between these proportions is shown in column (8): 0.027 with a standard error of 0.015. The proportion of daughters with a record of drunk driving is 7.75 times larger for those whose fathers have a conviction for drunk driving than for those whose fathers have not been convicted.

In rows (2) and (3) of Table 2, we look at father-child associations when sons and daughters are juveniles (19 or younger) separately from when they are adults (20 or older). We want to see if the associations reported in row (1) appear early or late in life, and whether they change as cohort members age.

Columns (2) and (3) in row (2) of Table 2 show the proportion of sons who have records of drunk driving as juveniles (Any juvenile drunk driving) with and without fathers who have a record of drunk driving. The proportions of sons with records of juvenile drunk driving are 0.091 and 0.029 respectively. The

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13 The standard errors of the t-tests reported in Table 2 are calculated under the assumption of unequal variances between groups.
Table 2. Father-Child Drunk Driving Associations.

<table>
<thead>
<tr>
<th>Cohort Member Variables</th>
<th>Sons</th>
<th>Daughters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (1)</td>
<td>All (1)</td>
</tr>
<tr>
<td></td>
<td>With convicted father</td>
<td>With convicted father</td>
</tr>
<tr>
<td></td>
<td>Without convicted father</td>
<td>Without convicted father</td>
</tr>
<tr>
<td></td>
<td>Difference (2)–(3)</td>
<td>Difference (6)–(7)</td>
</tr>
<tr>
<td>(1) Any drunk driving</td>
<td>Proportion with drunk driving conviction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.081 (0.003)</td>
<td>0.079 (0.003)</td>
</tr>
<tr>
<td></td>
<td>0.182 (0.035)</td>
<td>0.079 (0.003)</td>
</tr>
<tr>
<td></td>
<td>0.079 (0.003)</td>
<td>0.102*** (0.035)</td>
</tr>
<tr>
<td></td>
<td>0.005 (0.001)</td>
<td>0.031 (0.015)</td>
</tr>
<tr>
<td></td>
<td>0.102*** (0.035)</td>
<td>0.005 (0.001)</td>
</tr>
<tr>
<td></td>
<td>0.004 (0.001)</td>
<td>0.007 (0.008)</td>
</tr>
<tr>
<td></td>
<td>0.027* (0.015)</td>
<td>0.007 (0.008)</td>
</tr>
<tr>
<td>(2) Any juvenile drunk driving</td>
<td>0.030 (0.002)</td>
<td>0.029 (0.002)</td>
</tr>
<tr>
<td></td>
<td>0.091 (0.026)</td>
<td>0.062** (0.026)</td>
</tr>
<tr>
<td></td>
<td>0.051 (0.001)</td>
<td>0.001 (0.000)</td>
</tr>
<tr>
<td></td>
<td>0.001 (0.000)</td>
<td>0.007 (0.008)</td>
</tr>
<tr>
<td></td>
<td>0.007 (0.008)</td>
<td>0.007 (0.008)</td>
</tr>
<tr>
<td>(3) Any adult drunk driving</td>
<td>0.061 (0.003)</td>
<td>0.060 (0.003)</td>
</tr>
<tr>
<td></td>
<td>0.124 (0.030)</td>
<td>0.064** (0.030)</td>
</tr>
<tr>
<td></td>
<td>0.004 (0.001)</td>
<td>0.023 (0.013)</td>
</tr>
<tr>
<td></td>
<td>0.004 (0.001)</td>
<td>0.019† (0.013)</td>
</tr>
<tr>
<td>(4) Number of drunk driving convictions</td>
<td>0.126 (0.007)</td>
<td>0.124 (0.007)</td>
</tr>
<tr>
<td></td>
<td>0.248 (0.054)</td>
<td>0.124** (0.055)</td>
</tr>
<tr>
<td></td>
<td>0.124** (0.055)</td>
<td>0.007 (0.002)</td>
</tr>
<tr>
<td></td>
<td>0.092 (0.059)</td>
<td>0.006 (0.001)</td>
</tr>
<tr>
<td></td>
<td>0.087† (0.059)</td>
<td>0.087† (0.059)</td>
</tr>
<tr>
<td>Observations</td>
<td>7719 (121)</td>
<td>7598 (130)</td>
</tr>
<tr>
<td></td>
<td>7719 (121)</td>
<td>7398 (7268)</td>
</tr>
<tr>
<td></td>
<td>7719 (121)</td>
<td>7398 (7268)</td>
</tr>
</tbody>
</table>

(a) The father variable is *Dad drunk driving*, as defined in Table 1. This variable is an extensive margin measure of fathers’ drunk driving and is equal to one if a father has a conviction for drunk driving recorded in the social register. (b) Estimated standard errors are in parentheses and are produced by *ttest* in Stata 11, assuming unequal variances between groups. *** denotes significance at 1%; ** denotes significance at 5%; * denotes significance at 10%; † denotes significance at 15%.
estimated difference, shown in column (4) of row (2), is 0.062 with a standard error of 0.026. The proportion of sons with a record of juvenile drunk driving is 3.1 times larger for those whose fathers have a conviction for drunk driving than for those whose fathers have not been convicted. For daughters the proportion is 8 times larger, but the difference between the two groups of daughters, reported in column (8) of row (2), is not statistically significant.

Columns (2) and (3) in row (3) of Table 2 show the proportion of sons who have records of drunk driving as adults (Any adult drunk driving) with and without fathers who have a record of drunk driving. The proportions of sons with records of adult drunk driving are 0.124 and 0.060 respectively. The estimated difference, shown in column (4) of row (3), is 0.064 with a standard error of 0.030. The proportion of sons with a record of adult drunk driving is 2.1 times larger for those whose fathers have a conviction for drunk driving than for those whose fathers have not been convicted. For daughters the proportion is 5.75 times larger, but the difference between the two groups of daughters, reported in column (8) of row (3), is only marginally significant at the 15 percent level.

We conclude that intergenerational associations in drunk driving appear before age 20. These correlations appear to weaken as cohort members age into adulthood.

In row (4) of Table 2 we relate the number of convictions for drunk driving that a cohort member has in the official police register up to age 31 (Number of drunk driving convictions) to whether his or her father has a record of drunk driving in the social register (Father drunk driving 1). Columns (2) and (3) in row (4) of Table 2 show the average number of convictions for sons with and without fathers who have a record of drunk driving. These averages are 0.248 and 0.124 respectively. The estimated difference shown in column (4) of row (4) is 0.124 with a standard error of 0.055. The average number of convictions of sons is twice as large for those whose fathers have a conviction for drunk driving than for those whose fathers have not been convicted. For daughters the average number of convictions is 15.3 times larger, but, once again, the result for daughters is only marginally significant.\textsuperscript{14}

4. Robustness Checks

Our main indicator variable for fathers’ drunk driving (Father drunk driving 1) is equal to one if the cohort member’s father has a record of drunk driving in the local social register. There are two primary reasons that the police or courts would make such a report to the social authorities. One is that the report would be made

\textsuperscript{14} In general, it is difficult to establish statistical significance for daughters in these tests due to the infrequent nature of drunk driving among women. Specifically, only 35 daughters have any drunk driving convictions and just 4 of these have fathers who also have a drunk driving record.
to those social authorities who would then provide treatment to the father. The second reason is that the report would be made to those social authorities who would then look into the well-being of his children.

It is likely, however, that some convictions were never reported to the social authorities. Also, the likelihood of a report being made by the police or solicited by the social authorities may be greater for those persons who belong to families that already had an active file at the social welfare office. Thus we should be concerned with the potential bias produced if we are only using families that have had contact with the social authorities to identify an effect. How would such an effect differ from one produced by a purely random sample of families?

One simple way of testing the sensitivity and generalizability of our baseline results is to reestimate row (3) of Table 2. The dependent variable in row (3) is Any adult drunk driving. This variable is for the cohort member and is taken from the national police register, not from the social register. The independent variable in Table 2 is Father drunk driving 1, which is taken from the social register. As mentioned before, we have access to a second measure of fathers’ behavior. The Father drunk driving 2 variable is taken from the national police register, not from the social register. This variable is not our preferred variable because it also includes other serious traffic offenses. If we use this variable instead of Father drunk driving 1, then we are correlating police register data with police register data. This contrast should be largely free from bias due to nonrandom sampling, i.e., due to an overrepresentation of individuals with active files at the social welfare office.15

The baseline contrast for sons reported in column (4) of row (3) in Table 2 is 0.064 with a standard error of 0.030. The alternative estimated contrast is 0.056 with a standard error of 0.021. The new estimate is somewhat smaller, but not significantly so. For daughters the original estimate shown in column (8) of row (3) in Table 2 is 0.019 with a standard error of 0.013. The new estimate is 0.010 with a standard error of 0.007. This new estimate is quite a bit smaller, but not significantly so. Furthermore, this lower correlation is most likely due, at least in part, to the fact that we are now regressing a variable that includes multiple types of offenses (drunk driving plus other serious traffic offenses) on a variable that includes only one type of offense (drunk driving).16

As a further set of robustness checks, we reestimated all of the contrasts reported in Table 2 using both of our alternative measures of fathers’ drunk driving, Father drunk driving 2 and Father drunk driving 3. None of the

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15 Another reason that we are interested in looking at Father drunk driving 2 is that it contains records of drunk driving from 1942 to 1972, while Father drunk driving 1 only covers the years 1953 to 1972.

16 A potentially more serious problem than sample selection is that our estimated contrasts are likely to be biased downward by measurement error.
estimated contrasts using these alternative variables were significantly different from those reported in Table 2.17

5. Conclusion

This paper uses administrative drunk driving data for a 1953 Stockholm birth cohort and their parents to study the intergenerational nature of drunk driving. A strong intergenerational relationship is observed for both sons and daughters. The proportion of sons with a record of drunk driving is 2.3 times larger for those sons whose fathers have a conviction for drunk driving than for those sons whose fathers have not been convicted. For daughters this proportion is 7.8 times larger. The average number of convictions is twice as large for sons whose fathers have a conviction for drunk driving than for sons whose fathers have not been convicted. For daughters the average number of convictions is 15.3 times larger.

How do these intergenerational drunk driving relationships compare to those for related measures of antisocial behavior? Using the same data set, Hjalmarsson and Lindquist (2010) found that sons whose fathers have at least one sentence (of any type) have odds of having a criminal conviction (for any crime) 2.06 times higher than sons whose fathers have no sentence. Windle (1997) reports that children of alcoholics are 4 to 9 times more likely to develop an alcohol-use disorder than children of non-alcoholics. Thus the intergenerational drunk driving correlations that we observe are similar in magnitude to those observed for other antisocial behaviors and for alcoholism.

One question that remains, however, is how much of the intergenerational drunk driving relationship is simply a by-product of these other two relationships. Do both parents and their children drink and drive because they are both alcoholics, or because they both have a general disregard for the law? In future research we therefore intend to study the underlying causal mechanisms that produce these correlations. A better understanding of the origins of parent-offspring associations in drunk driving is necessary for developing relevant theories and for designing social policies.

References


17 These results are available from the authors upon request.


