



The “genetics” of driving behavior:

parents' driving style predicts their children's driving style

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Abstract

It can be hypothesized that children inherit their parents' driving habits both through genetic disposition and model learning. A few studies have shown indeed that parents' and their children's traffic convictions and accidents correlate which, however, may be due to life style and other exposure factors. This study aimed at investigating the relationships between parents' and their children's self-reported driving behavior. The subjects were 174 parent-child pairs who independently completed a questionnaire. Driving behavior - driving style - was evaluated by means of Manchester Driver Behaviour Questionnaire (DBQ), while data about driving exposure, life style, accidents, and traffic tickets were also collected. A series of regression models indicated that parents' self reported driving behavior explains their children's respective self reported behavior, even when exposure and demographic and life-style factors are controlled.

Introduction

Recent research has shown that the parents have a major role in explaining children's road accidents.

- Studies show that parents' role is important in decisions that affect children's car use and exposure to driving-related risks. Such decisions partly reflect parents' life style that they transfer to their children.
- Accident involvement of young drivers could be explained because parents do not only give their children a model for life but also a model for driving style, that reflects both cognitive and motivational factors
- Convictions and crashes are dependent on exposure to risk and correlations between parents and children may result from many factors that increase the amount of driving and make exposure to risk more similar.

This study tested whether parents' driving style predicts their children's driving style when exposure factors are controlled.

Method

Sample

•The data consisted of 41 son-father pairs, 54 daughter-father pairs, 19 son-mother pairs and 60 daughter-mother pairs, amounting to 174 pairs altogether when more than one case from same families were included.

•123 Brazilian undergraduate and postgraduate students (63.4 % females). The students' mean age was 22.5 years (SD 2.4, range 18 to 30 years), license age 4.1 years (SD = 2.21, range 1-13 years), and yearly mileage 9323 km (SD 9230, range 50-70000 km). The parents' mean age was 52.2 years (SD 6.01, range 35-70 years), driving license 28.8 years (SD = 6.84, range 3-50 years), and yearly mileage 15410 km (SD 15932, range 100-120000 km).

Instruments

- The Driver Behaviour Questionnaire (DBQ - Lawton, Parker, Manstead and Stradling, 1997).
- A questionnaire about life style, largely focussing on family connectedness (Berg, Eliasson, Palmkvist and Gregersen, 1999).
- Background variables
- Number of accidents and tickets committed during the last 3 years were asked for.

Data collection

The students voluntarily completed the questionnaires in the classroom and received questionnaires for their parents, their brother(s) and sister(s), if available.

Results

- The correlations of tickets and accidents may reflect many kind of exposure factors instead of the true connection of driving style. As the DBQ is based on frequency scales, the amount of driving necessarily influences on the scores. To control such background and exposure variables, sequential regression analyses were applied to explain each DBQ factor. For the accidents and tickets, sequential logistic regression models were used respectively.
- Because of repeated measurements taken from families, which could somewhat inflate the results, the regression models were applied into the sample with only one (randomly selected) pair from each family (N=111).

Correlations for parent-child combinations

DBQ's factors ¹	Father-Son	Father-Daughter	Mother-Son	Mother-Daughter	All Parent-Child pairs ²
Errors	.39*	.31*	.48*	.36*	.37**
Ordinary Violations	.32*	.62**	.08	.32*	.33**
Aggressive Violations	.20	.52**	-.01	.07	.21**
Lapses	.04	.18	.56*	.20	.20**
Mileage (1000 km) ³	.25	.20	-.17	.09	.12
N	41	54	19	60	174

* p< 0.05 level (2-tailed), ** p<0.01 (2-tailed).

¹ Range from 0 (never) to 5 (very often)² Note: this column includes replications from the same families³ Logarithmic transformations were used for correlations

•The logistic regression models were computed to explain driving behavior (Errors, Ordinary Violations, Aggressive Violations and Lapses), Accidents and Tickets. The regressions were calculated in six steps. In the first step, children's gender and age were included into the model as predictors. The second step added six variables that measured the quantity and quality of children's driving exposure. The amount of driving exposure included kilometrage, amount of driving in rush hours, in motor ways and main roads, in suburban roads and county roads. The third step added reasons to drive, consisting of the time of day of driving and reasons to drive, as expressed by commuting (to work, to the university), driving with friends, and other leisure trips. The fourth step included life style with two items, the first of them indicating the nights in the week that the participants stayed at home and the nights of the week that they met friends. On the parents' side, the yearly kilometrage was included into the model in the next step. Then, in the final step, parents' DBQ score was added into the model indicating the same driving style component as the one to be explained in their children's responses.

Adjusted R²'s when predicting children's driving behavior (DBQ scales), accidents and tickets in six consecutive regression steps¹

	I Gender + age	II Children's driving exposure	III Reasons to drive	IV Life style	V Parents' driving exposure	VI Parents' respective driving behavior ²
Errors	-.015	.043	.075	.076	.101	.213**
Ordinary Violations	.057*	.152**	.183**	.176	.167	.202**
Aggressive Violations	-.006	.106*	.107	.184**	.182	.177
Lapses	-.002	-.014	.031	.035	.032	.028
Accidents ³	.013	.086	.235	.258	.260	.312
Tickets	.143	.416**	.530**	.543	.565***	.567

* p < .05; ** p < .01; *** p < .001

¹ p values refer to changes in R²² parents' errors were used to explain their children's errors, parents' ordinary violations for the children's ordinary violations, etc.³ for accidents and tickets, binary logistic regression was used, with Nagelkerke estimates for R²

Discussion and conclusion

- Our results, although based on a fairly small student sample (and self-reported data), confirms that parents' driving behavior influences their children's driving even when the major background and exposure factors are being controlled.
- We found important relationship between children's and parents' driving behavior in detailed analysis. These relationships were positive and significant and principally occurred in dangerous driving behaviors pointing out that the more errors and violations occur among parents, the more of such specific behavior can be expected from their children.
- However, aggressive violations were rather explained by the children's life style, which in this study is closely related to family connectedness. This may mask the direct effect of parents' aggressive behavior to their children's respective behavior. The results indicate that the closer the children are to their parents, the less they commit aggressive violations.