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Intergenerational transmission of health care habits in France

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Summary :

This article explores the intergenerational transmission of health care habits and the related differences in terms of health care and prevention use. Our study is based on a sample of 4 613 individuals who answered the 2010 French Health, Health Care and Insurance Survey and completed the specific questions about health care and prevention use and living conditions during childhood. Results provide evidence of an intergenerational transmission of health care preferences. More precisely, we show a transmission of health care habits and an influence of parental habits during childhood on the conditional number of general practitioner and specialist visits and on the use of preventive health service namely colon cancer screening. We also find a long term influence of maternal education on the use of smear test. This study shows the long term influence of social background and parental habits on adulthood health care use, which contributes to the intergenerational transmission of health inequalities.

Keywords : inequalities in health-care use ; health-care norms ; intergenerational transmission of health

1. Introduction

Access to health care is considered as a basic right and is promoted in order to achieve equity in health (Fleurbaey and Schokkaert, 2009 ; Fleurbaey and Schokkaert, 2011). However, there is large evidence of income-related and educational inequalities in health care use in France as in other European countries (Or et al., 2009 ; Bago d’Uva and Jones, 2009 ; Jusot et al. 2012, Devaux and de Looper, 2012). These inequalities are larger for specialist use and preventive care than for generalist use and are particularly important in France.

Two lines of explanations related to factors influencing the individual demand for care have been proposed¹. First, the results of the Equity project confirmed the role of direct cost of care, since inequalities in health care use, and in particular specialists use, increase with the level of copayment and the lack of health insurance (Or et al., 2009 ; Bago d’Uva and Jones, 2009, Jusot et al., 2012). A second explanation, in line with health capital models (Grossman, 2000), is the existence of informational barriers and differences in health preferences among educational and social groups, which may induce differences in health investment decision (Cutler, D. and Lleras-Muney, A., 2010).

Whereas preferences are traditionally considered as given in economic theory, a growing literature has studied the endogenous formation of preferences (Akerloff, 1997 ; Becker and Mulligan, 1997 ; Manski, 2000 ; Bisin and Verdier, 2001). Two sources of transmission have been proposed to explain this construction: a vertical transmission ("intergenerational effects") and an horizontal transmission ("contemporaneous effects"). According to the vertical transmission process, preferences may evolve as a result of cultural transmission by which a socialization process transmits preferences across generations. The horizontal transmission consists in the social diffusion of beliefs, norms and habits among a same generation through peers influence and through an imitation process by which individuals imitate other “successful” individuals.

In particular, health-related norms or preferences seem to be socially constructed through cultural transmission or social capital influence (Costa-Font and Miladovsky, 2008 ; Marmot and Wilkinson, 2006 ; Kawachi et al. 2008 ; Folland, 2008). A growing body of literature provides evidence of a horizontal transmission of health norms and preferences. Several studies have shown the influence of social capital, as measured by social participation or

¹ For determinants related to health care system organization, see Or et al. (2009), Bago d’Uva and Jones (2009) and Jusot et al. (2012).

contextual measures of social relationship, on health status, health-related behaviors and health care use (Islam, 2007 ; Sirven and Debrand, 2008 ; Iversen, 2008 ; Jusot et al., 2008 ; Laporte et al., 2008 ; Scheffler and Brown, 2008 ; d'Hombres et al., 2010). Several studies have also demonstrated the existence of peers influence on health-related behaviors, such as smoking or obesity (Clark and Etilé, 2006 ; Clark and Loheac, 2007 ; Etilé 2007).

An intergenerational transmission of health has been also hypothesized, in particular to explain the persistence of inequalities in health through generation (Ahlburg, 1998). Beyond a common genetic inheritance, the vertical transmission of health seems to be due to a long term effect of social background and childhood conditions on health, to social reproduction phenomena and to the transmission of health-related preferences (Case et al., 2005 ; Currie and Stabile, 2003, Lindeboom et al., 2009, Trannoy et al 2010). Among the studies that have previously explored the intergenerational transmission of health some of them have provided evidence of a transmission health-related behaviors such as exercising, smoking, alcohol consumption and obesity (Rosa-Dias, 2009 ; Jusot et al., 2010 ; Rosa-Dias, 2010 ; Bricard and Jusot, 2012 ; Tubeuf et al., 2012). However, to the best of our knowledge, the transmission of health preferences through health care use or prevention has never been explored due to the lack of data.

This paper proposes to fill this gap and to investigate intergenerational transmission of health care habits, based on a representative health survey, The 2010 French Health, Health Care and Insurance Survey, which has been properly designed for assessing health care habits of the respondents as well as health care habits of their ascendants. Two different steps of analysis are proposed. As a starting point, we focus on the long term effect of parental habits during childhood on health care habits in adulthood to test the transmission of health care habits across generations. Then, we analyse the long term effect of childhood habits on health care and prevention use including or not the individual health care habits variable.

2. Data

This study is based on the 2010 French Health, Health Care and Insurance Survey (ESPS survey). The survey, representative of the French population, is coordinated by the Institute for Research and Information in Health Economics (IRDES) since 1988. It contains data on health status, access to health care services, health insurance and economic and social status of individuals aged 18 years and above. The 2010 survey included several questions on living conditions during childhood and parents' health status and parents' health-related behaviors

when the respondent was 12 years old. This set of questions on childhood conditions was previously introduced in the 2006 ESPS survey and a comprehensive description of the questionnaire can be found in Bricard et al. (2010) and Jusot et al. (2010).

In the 2010 version, a focus has been made to explore the intergenerational transmission of health care habits and two specific questions about the parental health care habits of the respondent during childhood and his own health care habits during adulthood are added. Our sample is restricted to the 4613 individuals who have answered the specific survey on childhood living conditions (see Table 1 for Descriptive statistics).

-- Insert Table 1 about Here --

Parental and individual health care habits

We appreciate parental health care habits during childhood using a retrospective question based on the respondent perception of parental health care behaviors :

"During your childhood, what did your parents do when you first start to feel sick ? ...1. wait and see if the problem does not improve itself ; 2. try to treat yourself with drugs ; 3. go to the doctor immediately ; 4. try to use home remedies or alternative medicine (the individual can choose several answers)".

A second question has been asked to the respondent concerning the perception of his own health care habits in adulthood :

"Personally, what do you do when you first start to feel sick ? ... (then the same list of answers and the individual chooses one of them)".

The first retrospective question is used to proxy the respondent's use of care during his childhood since this information is not observable in our data. Moreover, even if the respondent's use of care during his childhood was observable, parental preferences would not easy be elicited from his health care use in absence of a full information of his health status during his childhood. Conversely, subjective question on parental decisions for their child's use of care during childhood permits to appreciate directly parental preferences since the control for the need of care is directly included in the question. The same argument can be applied to the second question, which allows assessing directly respondent's health habits.

The subjectivity of these questions may induce several types of reporting bias, which may, in particular, induce artificially a concordance between their parent's attitudes and their own

attitudes. However, regarding the technical difficulties for identifying social interactions from the direct observation of behaviors, the validity of using subjective data has been stressed in the literature (Manski, 2000 ; Senik, 2005).

We then assume that the retrospective question gives us information on parental preferences for health care and habits, and that the second question provides information on respondent's preference and habits in adulthood. Thus, it allows us to explore the association between those two measures in order to analyse the influence of parental preferences on individual preferences in adulthood for exploring the transmission of health care preferences across generations. We will also explore the association between those variable and several indicators of health care and prevention use, in order to analyse the contribution of the transmission of health care preferences to inequalities in health care use.

Table 2 reports the distribution of these variables in the sample. It shows that more than a half of respondents declared that their parents were more likely to see a doctor right away when they started to feel sick and around 30% for the other responses. In contrast, 46% of the respondents report that they are more likely to wait before visiting a doctor when they are feeling sick. The fact of declaring to see a doctor right away represents 18% of answers that is less important than declaring self care behavior which is reported by 31%. Only 5% reports using alternative medicine in first place.

-- *Insert Table 2 about Here* --

Health care and prevention use

Health care utilization is measured by the annual number of visits to a general practitioner and the number of visits to a specialist. Information on visits to the doctors is collected with two different questions. The decision to visit a GP or a specialist doctor is constructed on the basis of the question: "During the past twelve months, have you visited at least once a GP/specialist services ?". The frequency of GP and specialist visit is then measured on the basis of the question: "During the past twelve months, how many times have you visited a GP/specialist services ?".

We also examine the utilisation patterns of three common preventive services: colon cancer screening, smear test and mammography. For colon cancer screening, we observe, for people between 50 and 75 years old, the fact of having done a colonoscopy in the past five years or having done a hemocult test in the past two years. For smear test and mammography, it

corresponds to the fact of having done at least one test in the past 3 years. It concerns women before 65 years old for smear test and between 50 and 70 years old for mammography.

Table 3 reports the distribution of the variables of health care use. It shows that 88% of our sample have consulted at least one time a GP during the last twelve months, and 58% have consult at least a specialist. Among those who had at least one visit, the conditional number of visits is in average 4.5 for GP visit and 3.7 for specialists. Finally, 54% of individuals aged 50 to 75 has done a colon cancer screening in the past five years, 71% of women aged less than 65 have done a smear test in the past 3 years, and 86% of women aged 50 to 70 have done a mammography.

-- Insert Table 3 about Here --

Social background variables

Due to the specific questionnaire on childhood conditions introduced in the 2010 wave of the ESPS survey, social background is measured by a large set of variables. It contains various indicators: parents' socioeconomic status, family economic situation during childhood and parents' health status. Parents' socioeconomic status is measured by both professional status and education level and is available for both parents. Professional status is measured in six categories for the father, namely farmer, craftsman, manager, associate professional, office worker and elementary occupations. For the mother, professional status is measured by a binary indicator distinguishing active and inactive mother. Four levels are available for education: dropped out or primary school, secondary school 1, secondary school 2 and university degree. In addition, the descendant reported whether he considered the financial situation of his family to be very comfortable, comfortable, difficult, or very difficult when he was 12. Finally, parents' health is measured by the respondent retrospective declaration of their health status when he was 12 years old. We use a binary indicator that isolates parents suffering from poor or very poor health.

Socio-economic status

The socio-economic status of individuals is measured by educational level, professional status, household income by quintile and complementary insurance coverage. Educational level is measured as follows: drop out or primary school, first level of secondary school, second level of secondary school and university degree. Individual professional status is measured the same way as the father one. Income is measured as household income (from all

sources of income), divided by the OECD equivalent scale (1 for the first household composition, 0.5 for the second and 0.3 for the third and following one). We created income quintile and a last category was built for those who did not provide income information. Complementary insurance coverage² is measured in three categories: having private complementary health coverage, having mean-tested complementary health coverage or not having complementary health coverage.

Other individual variables and accessibility of health care

To take into account for differences in the need for health care and prevention, we introduce several indicators to proxy health care needs: age, sex, a self-assessed health (SAH), report of functional limitations, chronic conditions and long term affections.

We also introduce a control for supply of general practitioners and medical specialists. It consists of four density measures of the number of physicians per 100.000 inhabitants at a departmental level : one for GPs in sector 1³, one for GPs in sector 2, one for specialists in sector 1 and one for specialists in sector 2.

² The French health-insurance system consists of two parts: National Health Insurance and complementary health insurance. The National Health Insurance fund provides public, compulsory and universal health insurance which covers 76% of overall health expenditure, about 90% of inpatient care expenses, 55% of ambulatory-care expenses, but very little with respect to dental and eye care. The residual costs can be covered by a complementary health insurance policy, which can be purchased either individually or through the individual's employer. Starting in 2000, a free and public complementary health insurance, called CMU-C, has been available for low-income individuals, which pays for most out-of-pocket expenses.

³ There are two types of physicians in France which differ according to their fees. The cost of visits to doctors in sector 1 corresponds to the statutory fee. Thus, the co-payment part is covered by all complementary insurance contracts. Doctors in sector 2 are allowed to have extra fees, which are only covered by some supplementary insurance contracts.

3. Methods

Two steps of analysis are proposed to explore the intergenerational transmission of health care habits. In a first step, we study the correlation between parental and child habits for health care in order to test for an intergenerational transmission of preferences for health care. In a second step, we explore the association between both parental and child habits and health care and prevention use.

Transmission of health care habits across generations

To estimate the correlation between parental and child health care habits, we are worried with two main identification problems.

The first issue is that parent-child transmission of health care habits may be due to correlated effects (Manski, 2000). Then, the parent-child correlation in socio-economic situation such as income, education or social class is making easier the share of health care habits. This concern is minimized in our study by the introduction in analysis of a comprehensive set of socio-economic variable concerning both parents and child.

The second issue is that the parent-child correlation may be spurious because of unobserved health status during childhood that may explain both childhood and adulthood health care behavior. The use of a large set of health variables such as chronic condition that may come from childhood minimizes this potential problem. This problem is also minimized in our study by the use of a subjective measure of health care habits asking what people used to do when they are feeling sick.

Then, health care habits of the individual in adulthood (Hab^{ind}) is written as the following function:

$$Hab^{ind} = f(Need, X^{ind}, X^{par}, Hab^{par}) \quad (\text{Eq. 1})$$

where *Need* represents several measures of individual health, X^{ind} and X^{par} respectively the individual and parental socioeconomic variables and Hab^{par} the parental health care habits during childhood.

The general question about health care habits in adulthood is a four categories variable. In order to model the correlation between this variable and the variable concerning parental health care habits during childhood, we decide to use a multinomial logit regression. Using a

probabilistic choice framework, we consider $Hab^{ind}_{ij}^*$ the propensity of the individual i to choose the alternative j :

$$Hab^{ind}_{ij}^* = X_i\beta_j + u_{ij}, j = 0, \dots, J$$

where X_i is the set of independent variables and u_{ij} are other unobservable affecting individual habits.

In a multinomial logit model the probability of having the habit j is :

$$P(Hab^{ind} = j/X) = \frac{\exp(X\beta_j)}{1 + \sum_{h=1}^J \exp(X\beta_h)}, j=1, \dots, J$$

$$\text{and } P(Hab^{ind} = 0/X) = \frac{1}{1 + \sum_{h=1}^J \exp(X\beta_h)}.$$

Association between health care habits and health care and prevention use

In the second part of the analysis, we are testing the association between health care and prevention use and health care habits. As for the previous part of the analysis, we are worried about a control for health factors influencing the demand for care or prevention (*Need*). We are also controlling for individual socio-economic status (X^{ind}) that may impact different aspects of the health care demand: complementary health insurance coverage, income, professional status and educational level. Supply side aspects are also considered through the introduction of physician density variables.

Two steps of analysis are considered. In a first step, we are interested in the long term effect of parental habits during childhood on the use of care and prevention (Model A). To control for social background during childhood correlated with parental habits, we decide to include several parental variables (X^{par}). The use of care or prevention is viewed as this following function :

$$Use = f(Need, X^{ind}, X^{par}, Hab^{par}) \quad (\text{Eq. 2A})$$

Then, in a second step, we introduce the variable of health care habits during adulthood (Hab^{ind}) to have a greater insight on what represents the variable of individual habits (Model B) :

$$Use = f(Need, X^{ind}, X^{par}, Hab^{par}, Hab^{ind}) \quad (\text{Eq. 2B})$$

This last step will help us to determine which dimensions of health care and prevention is measured by our health care habit variable as well as to know if the potential influence of parental habits in health care and prevention use is direct or mediated through our measure of individual habits.

a. GP and specialist visits

We decide to employ a two part model to estimate the number of GP and specialist visits. Our strategy relies on the assumption that health care use is a two stages decision process: a contact decision and a frequency decision. This model is a generalized Tobit that assumes two latent variables (Use_i^{C*} explaining the contact decision for the individual i and Use_i^{F*} explaining the frequency decision) and one observable variable Use_i measuring the number of visits for the individual i :

$$Use_i^{C*} = X_{1i}\beta_1 + u_{1i} \quad (1)$$

$$Use_i^{F*} = X_{2i}\beta_2 + u_{2i} \quad (2)$$

$$\text{with } Use_i = Use_i^{F*} \text{ if } Use_i^{C*} > 0 \quad \text{and} \quad Use_i = 0 \text{ if } Use_i^{C*} \leq 0$$

where X_{1i} , X_{2i} are two sets of independent variables and β_1 , β_2 the vectors of associated parameters.

We estimate this model using a two part procedure with the Heckman correction to account for sample selection. The contact decision is estimated using a Probit model and the frequency decision, represented by the log transformation of the conditional number of visit, is estimated separately using OLS regression including the inverse Mills ratio from the first equation.

b. Prevention use

We assume a latent variable Use_i^{P*} explaining the use of prevention for an individual i and a variable Use_i^P measuring the observed choice of prevention of the same individual. Then,

$$Use_i^{P*} = X_i\beta_1 + u_i$$

$$\text{and } Use_i^P = 1 \text{ if } Use_i^{P*} > 0 \text{ and } Use_i^P = 0 \text{ otherwise}$$

where X_i is a set of independent variables and u_i an error term that follows a normal distribution. We apply several Probit models to analyze this binary choice of using or not each preventive care.

4. Results

Transmission of health care habits across generations

The results of the multinomial logit for health care habits in adulthood are presented in Table 4. It corresponds to the effect of the independent variables on the choice of the different alternatives comparing to going to the doctor immediately. The hypothesis of an intergenerational transmission of health care habits is confirmed by the positive and significant coefficients of the corresponding parental health care habits during childhood. This is also confirmed by a negative association of the fact of having seen a doctor right away in childhood with all the alternative habits in adulthood.

-- Insert Table 4 about Here --

Most of the individual socio-economic variables are significantly associated with individual health care habits in adulthood. Individuals with higher educational level and higher level of income are more likely to report having a self-care behavior and to a lesser extent waiting before visiting than going to the doctor immediately. Similarly, craftsmen are more likely to report these behaviors whereas professional workers are more likely to have a self-care behavior or to use alternative medicine. Regarding complementary health insurance coverage, individuals with a mean-tested insurance are more likely to go the doctor immediately and those with private insurance coverage are less likely to report using alternative medicine.

The results also show that some social background variables have statistically significant effects. Individuals whose mother had higher level of education are more likely to report using alternative medicine or having a self-care behavior. The maternal influence's is confirmed by the fact that having a mother inactive during childhood is negatively associated with waiting and self-care behaviors. We also find that declaring to wait before visiting and to have a self-care behavior is associated with a very difficult family financial situation. These behaviors are also similarly associated with the report of a poor mother's health.

Association between health care habits and health care and prevention use

GP visits

The results of the two part models designed to study the association of health care habits with generalist visits are presented in Table 5. We find evidence of a long term effect of parental habits during childhood on the choice of visiting a GP in both model A and B. Surprisingly there is a positive association between the decision to contact a GP and a parental self-care

behavior in childhood. But this association is weak and even weaker after control for individual habits. After this control, we also find a little positive effect of parental use of alternative medicine in childhood on this decision of visiting a GP. We observe a more expected negative association between the frequency decision and the parental habit of waiting before visiting and trying self-care behavior. Most of this association is removed by the inclusion of individual habits in adulthood which suggests a more indirect effect of parental habits.

-- *Insert Table 5 about Here* --

Individual habits in adulthood is found to be associated with the two stages of decision in an expected way. The fact of reporting to wait before visiting, to try self-care behavior and to use alternative medicine is associated with a decrease of the probability of visiting a GP and on the likelihood of the number of GP visits comparing to the fact of reporting to see a doctor right away.

Concerning individual socio-economic variables, most are not significant and only the complementary health coverage status appears to have important effect on both decision stages to visit a GP. Individuals with no complementary health coverage are less likely to initiate a GP visit. However, among individuals having consulted a GP over the past twelve months, only persons covered by the mean tested health coverage consult more intensely their GP than individuals with no complementary health insurance. We also found that professional workers are more likely to consult a GP than workers with elementary jobs. Finally, farmers and individuals with an income corresponding to the third quintile of the distribution have a greater number of conditional visits.

Only few social background variables are associated with GP's visits. Surprisingly, individuals with highly educated father are less likely to initiate a GP visit whereas those with highly educated mother are more likely to. The conditional number of visits is associated in opposite way with the fact of having a highly educated mother and with the fact of having a father farmer. This association is positive for those who have a father in poor health.

Specialist visits

Table 6 reports the two part models results for specialist visits. Parental and individual habits are only found to have an effect on the conditional number of visits. Thus, when controlling for individual habits, results show that parental habits of waiting before visiting is positively

associated with the frequency of visits. But in an opposite and more significant way individual habits of waiting before visiting is found to be negatively associated with the conditional number of visits.

-- Insert Table 6 about Here --

There is a clear socio-economic gradient related to education for both decisions to visit a specialist, suggesting a positive relationship between higher education level and the propensity or the frequency of specialist visit. Income and complementary health insurance coverage is positively associated with the decision to visit a specialist and not with the conditional number of visits suggesting that it exists an access problem resulting to the cost of specialist visit.

Social background has only a minor long term effect on the visit of specialist, namely the fact of having an inactive mother is negatively associated with the contact decision. None of these variable are associated with the conditional number of visits.

Prevention use

The results concerning the use of prevention are presented in Table 7. There is evidence of a long term effect of parental habits on prevention use only with colon cancer screening and a positive association of this latter with the parental use of alternative medicine. Association between individual habits is also found significant for colon cancer screening only and results show that the report of visiting a doctor immediately is associated with a greater probability of doing a colon cancer screening.

-- Insert Table 7 about Here --

The influence of socio-economic variables is concentrated on a clear income gradient for all prevention use variables and on a complementary health insurance effect for colon cancer screening and smear test.

The influence of social background is more limited but results show a long term positive influence of maternal education for smear test and of paternal education for mammography. Mother's inactivity is found to be associated with both colon cancer screening and mammography. Results show an association between poor maternal health and mammography. To conclude, having a father farmer is associated with an increase in the probability of doing a smear test and having a father manager is associated with an increase in the probability of doing a mammography.

5. Conclusion

This study provides some new evidence of an intergenerational transmission of health care habits. Based on a representative French Health survey in 2010, our results show a correlation between health care habits across generations. There is also evidence that both parental and individual health care habits are associated with the use of health-care, namely GP and specialist visits and in a lesser extent with the use of prevention. More precisely, health care habits as measured in our questions are more correlated with GP visits and with the conditional number of visits for specialists. This is probably due to the fact that the different issues in terms of health care proposed in the health care habits question are more specific to a GP use. However, this is also reflecting more general dimensions of health care preferences. For the case of prevention, we show a long term effect of social background, such as a long term influence of maternal education on the use of smear test, which may reflect more specific transmission concerning prevention use.

There are several possible reasons for expecting this positive intergenerational correlation between health-care habits across generations. A first explanation is the existence of a transmission of preferences or a social construction of preferences (Manski 2000, Bisin and Verdier 2001). It may reflect both intentional or unintentional parental influence (Walckirch 2004). Parents may intend to invest in the child human capital through health investments (Jacobson, 2000). Individuals observe the choice of their parents during childhood and are influenced by their consumptions or habits. It may also reflect the learning from parental habits of information concerning the health care system such as knowledge of pathways to care. But it may reflect more unintended reasons such as the share of other preferences such as time or risk preferences.

Other explanations may weaken the positive expected correlation or may even lead to a negative correlation. In a first place, "bad" parental health care habits during childhood may cause health problems in adulthood and may involve a change in the child health care habits in adulthood. Secondly, the child will be more disposed to change his habits in case of parental illness or health problems due to past health care habits. Finally, social capital through the influence of peers, information campaign promoting a particular health care behavior or a increase in the child educational level are others elements that could also reduce the influence of parental health care habits.

These results suggests a long term influence of social background and parental habits on adulthood health care use that contributes to the intergenerational transmission of health inequalities. It suggests that specific prevention and health promotion policies targeting underprivileged populations are potential avenues to reduce inequalities of opportunity in health, as well as government interventions aimed at improving equality of opportunities in education, or more globally, living conditions.

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7. Tables

Table 1: Descriptive statistics

	Frequency	%			
Sex					
Men	1879	40,73			
Women	2734	59,27			
Age					
less than 30	583	12,64			
30 - 39	866	18,77			
40 - 49	895	19,40			
50 - 59	836	18,12			
60 - 69	632	13,70			
more than 70	801	17,36			
Self-assessed health					
Very good	881	19,10			
Good	2118	45,91			
Fair	1183	25,64			
Poor, very poor	388	8,41			
Non response	43	0,93			
Functional limitations					
Heavy	349	7,57			
Weak	856	18,56			
No	3308	71,71			
Non response	100	2,17			
Chronic conditions					
Yes	1739	37,70			
No	2639	57,21			
Non response	235	5,09			
Long term affection					
Yes	945	20,49			
No	3668	79,51			
Father's education level					
Primary school or drop out	2339	50,70			
Secondary school 1	841	18,23			
Secondary school 2	272	5,90			
University degree	410	8,89			
Other or non response	751	16,28			
Father's social class					
Farmer	551	11,94			
Craftmen	439	9,52			
Manager	613	13,29			
Associate prof.	424	9,19			
Office worker	321	6,96			
Elementary jobs	1868	40,49			
No male head or non response	397	8,61			
Mother's education level					
Primary school or drop out	2710	58,75			
Secondary school 1	813	17,62			
Secondary school 2	357	7,74			
			University degree	287	6,22
			Other or non response	446	9,67
			Mother's activity		
			Active	3368	73,01
			Inactive	1245	26,99
			Family financial situation		
			Very comfortable	257	5,57
			Comfortable	2229	48,32
			Difficult	1678	36,38
			Very difficult	387	8,39
			Non response	62	1,34
			Father's health status		
			Very good, good, fair	4335	93,97
			Poor or very poor health	278	6,03
			Mother's health status		
			Very good, good, fair	4324	93,74
			Poor or very poor health	289	6,26
			Educational level		
			Primary school or drop out	877	19,01
			Secondary school 1	1786	38,72
			Secondary school 2	845	18,32
			University degree	1105	23,95
			Social class		
			Farmer	168	3,64
			Craftmen	247	5,35
			Manager	590	12,79
			Associate prof.	834	18,08
			Office worker	1398	30,31
			Elementary jobs	1141	24,73
			Inactive	235	5,09
			Income		
			1st quintile	697	15,11
			2nd quintile	774	16,78
			3rd quintile	773	16,76
			4th quintile	848	18,38
			5th quintile	935	20,27
			Non response	586	12,70
			Insurance situation		
			No complementary coverage	173	3,75
			Private complementary coverage	3932	85,24
			Means-tested complementary coverage	508	11,01
			Physician density		Mean
			Density of GPs in sector 1		80,62
			Density of GPs in sector 2		5,52
			Density of specialists in sector 1		50,62
			Density of specialists in sector 2		29,79

Table 2: Descriptive statistics of the report of parental and individual health-care habits (4613 individuals)

	Parental habits during adulthood (several possible answers)		Individual habits during childhood (one possible answer)	
	Frequency	%	Frequency	%
Wait before visiting	1 442	31.26	2 118	45.91
Self-care behavior	1 423	30.85	1 422	30.83
See a doctor right away	2 696	58.44	844	18.30
Use of alternative medicine	1 279	27.73	229	4.96

Table 3: Descriptive statistics of health-care and prevention use

Health care use	Mean
Probability of GP visits (4376 individuals)	0.88
Conditional number of GP visits (3841 individuals)	4.5
Probability of specialist visits (3994 individuals)	0.58
Conditional number of specialist visits (2326 individuals)	3.7
Prevention use	
Colon cancer screening (1670 individuals)	0.54
Smear test (2131 individuals)	0.71
Mammography (876 individuals)	0.86

Table 4: Multinomial logit estimated coefficients for health care habits in adulthood (vs see a doctor right away)

	Wait before visiting	Self-care behavior	Use of alternative medicine
Father's education level (vs primary school or drop out)			
Secondary school 1	0,082	-0,123	0,157
Secondary school 2	0,019	-0,220	-0,045
University degree	0,035	-0,072	-0,056
Other or non response	0,163	-0,063	0,204
Father's social class (vs elementary jobs)			
Farmer	-0,026	-0,095	0,191
Craftmen	-0,122	-0,040	-0,348
Manager	0,079	-0,061	0,115
Associate prof.	-0,130	-0,056	-0,430
Office worker	0,100	-0,019	0,378
No male head or non response	0,000	0,157	-0,133
Mother's education level (vs primary school or drop out)			
Secondary school 1	-0,011	0,131	0,006
Secondary school 2	0,337	0,462 **	1,024 ***
University degree	0,199	0,032	0,715 *
Other or non response	-0,044	-0,014	-0,197

Mother's activity (vs active)				
Inactive	-0,162 *	-0,212 **	-0,216	
Family financial situation (vs very difficult)				
Very comfortable	-0,487 *	-0,418	-0,429	
Comfortable	-0,166	-0,341 *	-0,226	
Difficult	-0,189	-0,446 **	-0,418	
Non response	-0,966 **	-0,751 *	-1,170	
Parental health status (vs very good, good, fair)				
Father poor or very poor health	0,252	0,119	0,271	
Mother poor or very poor health	0,465 **	0,426 **	0,122	
Educational level (vs primary school or drop out)				
Secondary school 1	0,177	0,276 *	-0,018	
Secondary school 2	0,495 ***	0,664 ***	-0,257	
University degree	0,289	0,426 **	-0,214	
Social class (vs elementary jobs)				
Farmer	-0,135	0,071	0,121	
Craftmen	0,733 ***	0,500 **	0,514	
Manager	-0,029	-0,174	-0,305	
Associate prof.	0,220	0,292 *	0,500 *	
Office worker	0,208	0,117	0,085	
Inactive	-0,198	-0,262	-0,021	
Income (vs 1st quintile)				
2nd quintile	0,199	0,518 ***	0,438	
3rd quintile	0,167	0,535 ***	0,374	
4th quintile	0,303 *	0,727 ***	0,488	
5th quintile	0,117	0,548 ***	0,172	
Non response	-0,086	0,371 *	0,329	
Insurance situation (No complementary health coverage)				
Private complementary health coverage	-0,043	-0,058	-1,062 ***	
Means-tested complementary health coverage	-0,457 *	-0,590 **	-1,094 ***	
Parental health care habits during childhood				
Wait before visiting	0,737 ***	0,166	0,102	
Self-care behavior	0,256 **	0,824 ***	-0,010	
See a doctor right away	-0,368 ***	-0,244 *	-0,541 **	
Use of alternative medicine	-0,144	-0,026	0,896 ***	

Adjusted for age, sex, health variables and physician access. Legend : * p<0,1; ** p<0,05 ; *** p<0,01.

Table 5: Two part regression marginal effects (probit) and coefficients (Log OLS) for generalit visits

	Probability of consulting a GP (Probit)		Conditional number of visits to a GP (Log OLS)	
	Model A	Model B	Model A	Model B
Father's education level (vs primary school or drop out)				
Secondary school 1	0,012	0,013	-0,047	-0,047
Secondary school 2	-0,037 *	-0,038 *	-0,061	-0,067
University degree	-0,041 *	-0,041 *	-0,058	-0,061
Other or non response	-0,009	-0,009	0,062	0,065 *
Father's social class (vs elementary jobs)				

Farmer	0,005	0,006	-0,097 **	-0,098 **
Craftmen	0,011	0,010	0,041	0,035
Manager	0,014	0,014	0,081 *	0,082 *
Associate prof.	0,012	0,012	0,057	0,054
Office worker	0,011	0,013	0,042	0,043
No male head or non response	0,040 **	0,038 **	0,030	0,034
Mother's education level (vs primary school or drop out)				
Secondary school 1	0,008	0,008	-0,020	-0,017
Secondary school 2	0,022	0,025	-0,065	-0,059
University degree	0,032 *	0,034 *	-0,118 **	-0,107 *
Other or non response	0,011	0,011	-0,017	-0,018
Mother's activity (vs active)				
Inactive	-0,011	-0,013	0,000	-0,001
Family financial situation (vs very difficult)				
Very comfortable	-0,045	-0,043	0,091	0,072
Comfortable	-0,012	-0,011	0,053	0,046
Difficult	-0,009	-0,008	0,046	0,039
Non response	0,013	0,009	0,018	0,002
Parental health status (vs very good, good, fair)				
Father poor or very poor health	-0,015	-0,014	0,107 **	0,115 **
Mother poor or very poor health	-0,008	-0,006	-0,002	0,004
Educational level (vs primary school or drop out)				
Secondary school 1	-0,025	-0,023	0,008	0,013
Secondary school 2	-0,016	-0,015	-0,037	-0,026
University degree	-0,012	-0,011	-0,013	-0,005
Social class (vs elementary jobs)				
Farmer	0,015	0,013	0,108 *	0,108 *
Craftmen	-0,019	-0,012	0,069	0,078
Manager	0,002	0,001	-0,039	-0,036
Associate prof.	0,028 **	0,029 **	-0,039	-0,033
Office worker	0,016	0,017	0,030	0,034
Inactive	0,024	0,025	0,050	0,050
Income (vs 1st quintile)				
2nd quintile	0,003	0,002	0,045	0,049
3rd quintile	-0,029	-0,029	0,093 **	0,093 **
4th quintile	0,010	0,011	0,027	0,030
5th quintile	0,027	0,026	-0,001	0,000
Non response	-0,008	-0,007	0,067	0,060
Insurance situation (vs no complementary health coverage)				
Private complementary health coverage	0,104 ***	0,097 ***	-0,054	-0,044
Means-tested complementary health coverage	0,056 ***	0,051 ***	0,142 *	0,144 *
Parental health care habits during childhood				
Wait before visiting	0,010	0,013	-0,058 **	-0,045
Self-care behavior	0,020 **	0,018 *	-0,058 **	-0,052 *
See a doctor right away	0,015	0,010	0,024	0,021
Use of alternative medicine	0,017	0,020 *	-0,006	-0,005

Individual health care habits (vs see a doctor right away)				
Wait before visiting	-0,057	***	-0,137	***
Self-care behavior	-0,045	***	-0,090	***
Use of alternative medicine	-0,156	***	-0,135	*
Mills ratio			-0,913	***
			-0,882	***

Adjusted for age, sex, health variables and physician access. Legend : * p<0,1; ** p<0,05 ; *** p<0,01.

Table 6: Two part regression marginal effects (Probit) and coefficients (Log OLS) for specialists visits

	Probability of consulting a specialist (Probit)		Conditional number of visits to a specialist (Log OLS)	
	Model A	Model B	Model A	Model B
Father's education level (vs primary school or drop out)				
Secondary school 1	0,020	0,021	0,040	0,039
Secondary school 2	0,023	0,024	-0,032	-0,038
University degree	0,002	0,002	-0,017	-0,021
Other or non response	0,013	0,014	0,043	0,044
Father's social class (vs elementary jobs)				
Farmer	-0,002	-0,001	-0,001	-0,001
Craftmen	0,041	0,040	-0,010	-0,017
Manager	0,035	0,036	0,007	0,007
Associate prof.	-0,012	-0,013	-0,024	-0,029
Office worker	-0,034	-0,034	0,048	0,058
No male head or non response	-0,029	-0,030	-0,023	-0,021
Mother's education level (vs primary school or drop out)				
Secondary school 1	0,011	0,010	0,018	0,020
Secondary school 2	0,016	0,017	-0,042	-0,036
University degree	-0,019	-0,016	0,081	0,094
Other or non response	-0,026	-0,026	0,025	0,025
Mother's activity (vs active)				
Inactive	-0,049	**	-0,049	**
			0,000	0,002
Family financial situation (vs very difficult)				
Very comfortable	0,026	0,025	0,065	0,056
Comfortable	0,011	0,011	-0,029	-0,030
Difficult	0,020	0,021	-0,050	-0,048
Non response	0,079	0,079	0,080	0,060
Parental health status (vs very good, good, fair)				
Father poor or very poor health	-0,004	-0,002	0,092	0,098
Mother poor or very poor health	-0,035	-0,038	0,009	0,015
Educational level (vs primary school or drop out)				
Secondary school 1	0,106	***	0,106	***
			0,249	***
Secondary school 2	0,141	***	0,138	***
			0,277	***
University degree	0,203	***	0,202	***
			0,370	***
			0,244	***
			0,270	***
			0,353	***
Social class (vs elementary jobs)				
Farmer	-0,024	-0,026	-0,156	-0,160
Craftmen	-0,012	-0,011	0,103	0,116
Manager	0,020	0,020	0,052	0,056

Associate prof.	0,045	0,045	0,038	0,035
Office worker	0,019	0,020	0,068	0,071
Inactive	0,016	0,017	-0,115	-0,120
Income (vs 1st quintile)				
2nd quintile	0,065 **	0,064 *	-0,138 *	-0,141 *
3rd quintile	0,061 *	0,059 *	-0,063	-0,069
4th quintile	0,062 *	0,060 *	-0,026	-0,027
5th quintile	0,138 ***	0,135 ***	0,047	0,038
Non response	0,077 **	0,075 **	-0,025	-0,027
Insurance situation (vs no complementary health coverage)				
Private complementary health coverage	0,229 ***	0,226 ***	0,253	0,234
Means-tested complementary health coverage	0,196 ***	0,196 ***	0,276	0,253
Parental health care habits during childhood				
wait before visiting	0,002	0,004	0,059	0,075 *
Self-care behavior	0,007	0,002	-0,001	-0,005
see a doctor right away	-0,021	-0,023	0,073	0,071
use of alternative medicine	0,022	0,025	-0,029	-0,034
Individual health care habits (vs see a doctor right away)				
Wait before visiting		-0,003		-0,135 ***
Self-care behavior		0,033		-0,025
Use of alternative medicine		-0,057		-0,040
Mills ratio			0,725 *	0,667 *

Adjusted for age, sex, health variables and physician access. Legend : * p<0,1; ** p<0,05 ; *** p<0,01.

Table 7: Probit estimated coefficients of prevention use equations

	Colon cancer screening		Smear test		Mammography	
	Model A	Model B	Model A	Model B	Model A	Model B
Father's education level (vs primary school or drop out)						
Secondary school 1	-0,030	-0,032	0,011	0,013	-0,014	-0,012
Secondary school 2	0,090	0,090	0,004	0,005	-0,036	-0,035
University degree	0,090	0,088	-0,056	-0,056	-0,125	-0,123
Other or non response	-0,078 *	-0,074	0,044	0,044	-0,061	-0,058
Father's social class (vs elementary jobs)						
Farmer	0,034	0,036	0,104 ***	0,103 **	0,024	0,022
Craftmen	0,067	0,067	0,026	0,024	0,049	0,048
Manager	-0,001	0,000	0,045	0,044	0,083 **	0,082 **
Associate prof.	0,032	0,027	0,028	0,027	0,049	0,047
Office worker	0,018	0,024	0,063	0,064	0,028	0,028
No male head or non response	0,024	0,029	0,024	0,025	0,059	0,059
Mother's education level (vs primary school or drop out)						
Secondary school 1	-0,051	-0,047	0,056 *	0,055 *	-0,069 *	-0,069 *
Secondary school 2	0,077	0,082	0,121 ***	0,122 ***	0,017	0,020
University degree	0,053	0,061	0,089 *	0,091 *	0,095	0,094
Other or non response	0,060	0,054	0,002	0,002	0,068 *	0,067 *
Mother's activity (vs active)						

Inactive	-0,048 *	-0,048 *	-0,024	-0,023	-0,050 **	-0,046 *
Family financial situation (vs very difficult)						
Very comfortable	-0,028	-0,026	0,040	0,039	-0,088	-0,096
Comfortable	-0,023	-0,025	0,029	0,030	-0,015	-0,018
Difficult	-0,012	-0,014	0,035	0,036	0,017	0,016
Non response	0,078	0,060	-0,089	-0,095	0,068	0,052
Parental health status (vs very good, good, fair)						
Father poor or very poor health	-0,023	-0,018	0,004	0,005	0,009	0,010
Mother poor or very poor health	0,010	0,011	0,027	0,027	-0,091 **	-0,094 **
Educational level (vs primary school or drop out)						
Secondary school 1	-0,018	-0,016	0,024	0,024	-0,052 *	-0,051 *
Secondary school 2	-0,080 *	-0,078	-0,007	-0,007	-0,069	-0,068
University degree	-0,084	-0,082	0,036	0,036	-0,044	-0,042
Social class (vs elementary jobs)						
Farmer	-0,005	0,000	-0,148	-0,146	0,032	0,037
Craftmen	0,003	0,007	-0,070	-0,071	-0,002	0,005
Manager	0,006	0,005	-0,014	-0,013	0,058	0,062
Associate prof.	0,026	0,027	0,027	0,026	0,007	0,014
Office worker	0,005	0,008	0,030	0,031	0,077 ***	0,080 ***
Inactive	-0,084	-0,093	-0,035	-0,036	0,036	0,033
Income (vs 1st quintile)						
2nd quintile	0,036	0,040	0,094 ***	0,093 **	0,059 *	0,060 *
3rd quintile	0,081	0,083	0,100 ***	0,099 ***	0,096 ***	0,095 ***
4th quintile	0,103 *	0,108 **	0,165 ***	0,164 ***	0,096 ***	0,096 ***
5th quintile	0,155 ***	0,159 ***	0,193 ***	0,192 ***	0,138 ***	0,137 ***
Non response	0,137 **	0,138 **	0,121 ***	0,120 ***	0,083 ***	0,084 ***
Insurance situation (vs no complementary health coverage)						
Private complementary health coverage	0,315 ***	0,317 ***	0,158 **	0,157 **	0,017	0,016
Means-tested complementary health coverage	0,221 **	0,219 **	0,111 *	0,110 *	-0,013	-0,016
Parental health care habits during childhood						
Wait before visiting	0,010	0,017	-0,010	-0,006	-0,015	-0,013
Self-care behavior	-0,022	-0,019	0,000	-0,002	0,006	0,005
See a doctor right away	0,010	0,005	-0,021	-0,023	0,004	0,001
Use of alternative medicine	0,049 *	0,047	0,000	0,001	0,017	0,017
Individual health care habits (vs see a doctor right away)						
Wait before visiting		-0,096 ***		-0,026		-0,047
Self-care behavior		-0,090 **		0,001		-0,041
Use of alternative medicine		-0,112 *		-0,017		-0,089

Adjusted for age, sex, health variables and physician access. Legend : * p<0,1; ** p<0,05 ; *** p<0,01.