Suffer for the Faith?
Parental Religiosity and Children's Health

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Outline

Religiosity and outcomes of adults

Economic literature: Mostly positive effects of religiosity on socioeconomic outcomes of adults

- leads to higher levels of education, income, and subjective well-being, higher levels of marriage, and lower levels of divorce (e.g., Gruber 2005, Campante and Yanagizawa-Drott 2013)
- insures against idiosyncratic and aggregate shocks (e.g., Clark and Lelkes 2006 and 2009; Dehejia et al. 2007; Popova 2014)
- reduces risky health behavior (e.g., Fletcher and Kumar 2013)

Most existing literature does not present causal evidence (except for Campante and Yanagizawa-Drott 2013; Popova 2014)

What about kids?

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Own religiosity affects health, education, behavior of adolescents:

- reduces risky health behavior of adults and adolescents (Gruber and Hungerman 2008; Fletcher and Kumar 2013, among others)
- improves educational outcomes of adolescents and reduces their asocial behavior (e.g., Regnerus 2003)
- improves psychological and overall health condition of children and adolescents of 6-19 ages (Chiswick and Mirtcheva 2013)

Parental religiosity and outcomes of children:

- fasting of pregnant women during the Ramadan leads to lower birth weights, mental disabilities, and worse educational outcomes of children (Almond and Mazumder 2011; Majid 2013)
- maternal religiosity is negatively correlated with the child immunization (Ha et al. 2014)

This paper

Does parental religiosity affect children's health?

1. the probability to have vaccinations
2. the probability of being hospitalized
3. the probability to have health problems

Account for the self-assesment of maternal religious beliefs and for the religious denomination

Contribution

Theory:
The adaptation of Grossman (1972) and Chiswick and Mirtcheva's (2013) to account for parental religiosity

Empirics:
Causal effects of maternal religiosity on children's health in Russia

Theory: The model of demand for kids' health

Demand for health *a la* Grossman (1972) and Chiswick and Mirtcheva (2013)

Health production function is presented as follows:

$$I_t = I_t(M_t, TH_t, PE_t, PR_t) \tag{1}$$

M_t is the availability of medical care

TH_t is the time of parents available for investing a child's health

PE_t is parental education

PR_t is parental religiosity

Transmission channels

Explaining a potential impact of religiosity on health from psychological, medical, sociological, and economic literature:

1. insurance effect
2. social network effect
3. regulating effect
4. internal psychological effect

Transmission channels (cont.)

1. **insurance effect**

   Religiosity provides the sense of coherence and support that buffer potential impacts of stressful events (Ellison 1994; Clark and Lelkes 2006 and 2009; Popova 2014, among others)

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2. **social network effect**

   Religious community may provide material and emotional support for an individual, but also endorses individual in pursuing ethical beliefs and interests of religious community that may potentially disregard his/her own interests (Chen 2010; Dehejia et al 2007; Idler 1987; Levin and Chatters 1998)

Transmission channels (cont.)

3. **regulating effect (the internal locus of control)**

   Religious norms motivate health-related behavior and provide a perception that such behavior will be rewarded (Fletcher and Kumar 2014; Gruber and Hungerman 2008; Regnerus 2003; Almond and Mazumder 2011; Majid 2013)

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   - +: religiosity provides meaning in life and optimism that reduce uncertainty, reduces the risk of loneliness, and gives self-esteem and hope (Ellison 1994; Levin and Chatters 1998; Rossi 1993, among others)

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   - +: religiosity provides meaning in life and optimism that reduce uncertainty, reduces the risk of loneliness, and gives self-esteem and hope (Ellison 1994; Levin and Chatters 1998; Rossi 1993, among others)
   - - : feelings of guilt and fear, and difficulties in communication with peers (Abbots et al. 2004; Azzi and Ehrenberg 1975; Chiswick and Mirtcheva 2013; Ellison et al. 2001)

Empirical model

$$H_{ij} = \beta_0 + \beta_1 PR_{pj} + \gamma' \mathbf{F}_{ij} + \delta' \mathbf{X}_{ij} + \lambda_j + \mu_t + \epsilon_{ij} \qquad (2)$$

i stands for a child, j stands for a region, p stands for a parent

H represents child's health (vaccinations, hospitalizations, and health problems)

PR_{pj} is a dummy variable and equals 1 if a parent assesses him/herself as being a believer/belonging to a particular religious denomination

F_{ij} is the vector of family characteristics such as education of a parent, marital and employment statuses of a parent, and household income.

X_{ij} is the vector of child characteristics such as initial health status at birth, gender and age.

λ_j and μ_t are regional and time dummies, respectively

ϵ_{ij} is a stochastic disturbance

Identification strategy

Binary outcome model with a binary endogenous regressor

Probit estimates are biased and inconsistent due to the endogeneity problem

- omitted variable problem
- measurement error in health may be related to religiosity
- simultaneity
- selection on observable and unobservable characteristics: Children of religious parents differ from children of non-religious parents

Identification strategy (cont.)

Methods used:

1. recursive bivariate probit
2. special regressor, a semiparametric approach suggested by Dong and Lewbel (2014)
3. propensity score matching:

   a) analyze the propensity of a parent to be religious

$$\Pr(PR_{pj} = 1 | \ X_{pj}) = \Psi(\boldsymbol{\alpha}' \mathbf{X}_{pj}) \tag{3}$$

   X_{pj} is the vector of parental characteristics
   Exclusion restrictions: church entities per capita in a region; regional share of divorces

   b) match children of religious parents to children of non-religious parents based on propensity scores and obtain ATT

Data

The Russia Longitudinal Monitoring Survey (RLMS), 2000-2003

Parental religiosity

1. Of what religion do you consider yourself? Orthodoxy/Islam/Other religion $\longrightarrow$ **a dummy variable "Religious"**
2. What do you think about religion? You are a believer/ You are more a believer than a non-believer/ You are more a non-believer than a believer/ You are a non-believer/ You are an atheist $\longrightarrow$ **a dummy variable "Believer"**

Children's health

1. Has the child had any health problems in the last 30 days? Yes/No
2. Has (he/she) been in the hospital in the last three months? Yes/No
3. Did he/she ever been vaccinated? Yes/No

Preliminary results

Probability that a child has vaccinations

Explanatory variable	Probit (marginal effects)		Bivariate probit (marginal effects)		Special regressor (marginal effects)		ATT	
	Believer	Religious	Believer	Religious	Believer	Religious	Believer	Religious
Maternal religiosity	0.013 **	0.014 *	0.016	0.010	0.012	-0.016	0.012	0.013
	(0.006)	(0.008)	(0.017)	(0.033)	(0.012)	(0.015)	(0.01)	(0.02)

Probability that a child was hospitalized during last three month

Explanatory variable	Probit (marginal effects)		Bivariate probit (marginal effects)		Special regressor (marginal effects)		ATT	
	Believer	Religious	Believer	Religious	Believer	Religious	Believer	Religious
Maternal religiosity	0.021 **	0.014	0.056	0.097	-0.003	-0.012	0.030	0.017
	(0.001)	(0.018)	(0.037)	(0.063)	(0.022)	(0.024)	(0.03)	(0.03)

Probability that a child had health problems during last 30 days

Explanatory variable	Probit (marginal effects)		Bivariate probit (marginal effects)		Special regressor (marginal effects)		ATT	
	Believer	Religious	Believer	Religious	Believer	Religious	Believer	Religious
Maternal religiosity	0.047 **	0.074 **	-0.156	-0.282	0.011	0.017	0.003	-0.032
	(0.022)	(0.029)	(0.182)	(0.227)	(0.174)	(0.402)	(0.04)	(0.08)

* p<0.10, ** p<0.05, *** p<0.01

Other controls: maternal education, maternal employment status, maternal marital status, household income, father in the family gender of a kid, age of a kid, body mass index of a kid at birth, regional and wave dummies

Preliminary results (cont.)

Table 4: IV regression results for children of different ages

Religiosity variable	Child < 6 y.o.	Child 6-14 y.o.
Dep. Var: Prob. of Vaccinations		
Parent belongs to religious denomination	0.371 (0.46)	0.171 (0.98)
	N=853	N=1563
Parent is a believer	0.196 (0.24)	0.101 (0.50)
	N=853	N=1563
Dep. Var.: Prob. of Health problems		
Parent belongs to religious denomination	-1.589 (2.28)	0.240 (1.77)
	N=854	N=1564
Parent is a believer	-0.930 (1.37)	0.143 (1.11)
	N=854	N=1564
Dep. Var.: Prob. of Hospitalization		
Parent belongs to religious denomination	1.170 (1.69)	0.291 (0.62)
	N=854	N=1564
Parent is a believer	0.685 (1.08)	0.174 (0.31)
	N=854	N=1564

Note: regional divorce rate is used as an instrument for religiosity

Standard errors are in parentheses

Preliminary results (cont.)

Table 5: IV regression results for children of parents with/without higher education

Religiosity variable	with higher educ.	without higher educ.
Dep. Var: Prob. of Vaccinations		
Parent belongs to religious denomination	-0.177 (0.26)	0.000 (0.50)
	N=536	N=1880
Parent is a believer	-0.201 (0.41)	0.349 (0.53)
	N=536	N=1880
Dep. Var.: Prob. of Health problems		
Parent belongs to religious denomination	0.868 (1.34)	0.000 (0.134)
	N=536	N=1882
Parent is a believer	0.990 (1.67)	-0.830 (1.78)
	N=536	N=1882
Dep. Var.: Prob. of Hospitalization		
Parent belongs to religious denomination	0.753 (1.11)	0.000 (0.46)
	N=536	N=1882
Parent is a believer	0.859 (1.25)	0.001 (0.60)
	N=536	N=1882

Note: regional divorce rate is used as an instrument for religiosity
Standard errors are in parentheses

Preliminary conclusions

- when endogeneity is not controlled for, religiosity of mother is positively related to children's health
- when endogeneity is controlled for, religiosity of mother has no effect on children's health
- results are robust to the choice of estimation method
- maternal religiosity makes neither harm to health of kids, nor salutary effects

Thank you for your attention!

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