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Civic awareness: Schooling or intergenerational transmission of civic attitudes.

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Abstract

There is an extensive empirical literature documenting a positive and significant correlation between educational attainment and various measures of civic outcomes. However, it has been recently claimed that these correlations could be the result of unobservable traits characterizing the environments in which individuals were reared. In this paper I estimate civic returns to education using a survey that reports information on the intergenerational transmission of civic attitudes during the respondents' adolescence. Overall, the results suggest a positive and significant effect of the intergenerational transmission of civic attitudes in adolescence on civic awareness in adulthood, an effect that could well dominate over the schooling effect.

Keywords: returns to education, intergenerational transmission

JEL Codes: I20, H80

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1. INTRODUCTION

It is widely believed that the stability of democratic institutions and the effectiveness of public policies depends to a great extent on the quality and attitudes of citizens. In other words, absent good citizenship, liberal societies are difficult to govern in the name (and toward the end) of the common good (Kimlycka and Norman, 1994; Sandel, 2010).

The main channel chosen by modern democracies to promote good citizenship is that of education: better-educated individuals are presumed to understand democratic practices more clearly and to support them more actively. The strong partial correlations between educational attainment and civic outcomes documented in the empirical literature have lent support to the view that education is effective at promoting civic behavior (Wolfinger and Rosenstone, 1980; Nie, Jung and Stehlik, 1996; Putman, 2001).

However, several authors have agued that these conventionally estimated correlations could be misleading and may significantly overstate the true civic returns to education (Dee, 2004; Milligan, Moretti and Oreopoulus, 2004; Kam and Palmer, 2008; Siedler, 2010; Berinsky and Lenz, 2011). Schooling and civic outcomes are simultaneously influenced by a variety of unobservable traits specific to the environments in which individuals are reared. In particular, there is evidence that the intergenerational transmission of civic attitudes during adolescence is relevant both to educational attainment and to shaping adult civic behavior.

On the one hand, parents' attitudes and political engagement shape their children's worldview and also their political behavior later in life (Beck and Jennings, 1982; Picketty, 1995; Flanagan, 2003). On the other hand, children of civically engaged parents are expected to do better in school and to achieve higher levels of educational certification than are children reared in other environments (Rosenstone and Hansen, 1993). This means that the intergenerational transmission of civic attitudes during adolescence could be driving the positive correlation between educational attainment and civic outcomes later in life.

In general, few surveys report information from which such intergenerational transmission could be recovered or approximated. The empirical papers analyzing civic returns to education have followed two basic approaches in dealing with these unobservables. The first is to include in the regressions a maximally comprehensive set of explanatory variables in order to "mop up" as much

as possible of the individual differences in intergenerational transmission of civic attitudes. Using this approach, Nie and Hollygus (2001) show that civic returns to education are both positive and statistically significant. The second frequently employed strategy is to rely on an instrumental variables approach. Using the proximity of colleges and state differences in child labor laws as instrumental variables, Dee (2004) finds evidence that additional schooling significantly increases the probability of voting in the United States and enhances such measures of civic-mindedness as newspaper readership and free speech. However, when using the change in number of compulsory years of schooling as an instrumental variable, neither Milligan et al. (2004) nor Siedler (2010) find evidence that additional schooling enhances civic attitudes in (respectively) the United Kingdom and Germany. Berinsky and Lenz (2011) likewise find little evidence of a causal relationship between educational attainment and political participation; these authors use as an instrumental variable the increase in educational levels induced by the Vietnam draft.

In this empirical paper I estimate civic returns to education using data from a Spanish survey reporting information that allows one to recover the intergenerational transmission of civic attitudes. Toward this end, I follow both of the empirical research strategies just described. First I include terms that capture the intergenerational transmission of civic attitudes as explanatory variables in a conventional regression testing for the civic returns to education. The assumption that these additional variables truly capture the unobservable factors that jointly determine civic behavior and educational attainment allows for a causal interpretation of the resulting estimates.

The results of this testing are consistent with the hypothesized dynamics. The true civic returns to education are significantly overstated when the intergenerational transmission of civic attitudes is omitted from the regressions. Moreover, the strength of that transmission during adolescence strongly enhances civic awareness later in life. Finally, additional schooling continues to have a positive and statistically significant effect on civic awareness in regressions that condition on the intergenerational transmission of civic attitudes.

Of course, it is likely that the variables designed to recover the intergenerational transmission of civic attitudes do not capture *all* the unobservables that drive the covariation between schooling and civic awareness. I therefore employ as an instrumental variable the geographical proximity of postcompulsory educational institutions for those individuals turning age 14 between 1969 and 1990. This instrumental variable identifies the civic returns to education for the would-be dropouts

after compulsory schooling—that is, those whose dropout behavior was changed by the proximity of postcompulsory educational institutions. The results derived under this approach are, in general, qualitatively similar to those already stated: for these would-be dropouts, the intergenerational transmission of civic attitudes in adolescence enhances civic awareness later in life and civic returns to education is significant in most civic outcomes considered.

Finally, civic virtue theorists suggest that the quality of democratic institutions could be at risk if the intergenerational transmission of civic values in adolescence has a dominant role in explaining adult civic engagement. Their main argument is that families tend to transmit only their worldview and not alternative viewpoints. Hence these authors advocate government intervention through the teaching of citizenship so that children are exposed to various points of view (Gutmann, 1999).

In the framework of a cultural transmission model I seek to shed some light on which mechanism for transmitting civic attitudes—families or schools—is more relevant in explaining observed civic behavior. The results indicate that family traits (i.e., the vertical transmission of civic attitudes) are significantly more predictive than is schooling (horizontal transmission) of adult civic awareness levels.

This paper contributes in several ways to the literature on civic returns to educational. It presents empirical evidence supporting the hypothesis that civic returns to education are significantly overstated in the conventional regression analysis of this topic, which fails to include variables that recover the intergenerational transmission of civic attitudes. That being said, educational attainment does play a role in enhancing civic awareness even after accounting, as this analysis does, for intergenerational transmission. Another contribution of this paper is that I focus on the relative importance of schooling and such intergenerational transmission for enhancing civic awareness on adulthood. In general, the literature on these issues has focused mainly on teenagers' civic behavior as a function of their parents' political engagement (Quintelier, 2007). Finally, I analyze the Spanish case, which has not been studied before despite being of interest for two notable reasons: the population's average level of schooling has increased during recent decades; and the Spanish democracy is relatively new (the military regime ended in the mid-1970s). These facts notwithstanding, most Spanish political scientists argue that the increasingly educated Spanish population has shown little interest in political issues or civic engagement (Megías, 2006).

The balance of the paper is organized as follows. Section 2 presents the data and discusses how

evaluating civic returns to education is affected by incorporating the intergenerational transmission of values. Section 3 describes the instrumental variables approach, and Section 4 uses a cultural transmission model to assesses the relative importance of family traits on civic awareness. Section 5 concludes.

2. DATA AND THE INCULCATION OF CIVIC ATTITUDES

In this empirical paper, citizenship outcomes are examined using the Citizenship, Participation, and Democracy Survey, a Spanish national representative survey carried out by the Centro de Investigaciones Sociológicas, a governmental research institution (CIS, 2002). The survey was collected via face-to-face interviews with a random sample of the Spanish population that amounted to 4,242 respondents aged 18 or older in the year 2002. I have selected a subsample individuals turning 14 years of age between 1969 and 1990 who are not living with their parents but do reside in the same locale where they were born; this subsample consists of 965 observations. In Spain, during these years students were required to remain in school until age 14, and the members of this subsample are all expected to have finished their education by 2002, the year of the survey. Finally, given that for some survey questions the responses are based on recalling what happened in adolescence, it should be noted that selecting a younger cohort could reduce the possibility and extent of recall bias.

The advantage of the CIS survey with respect to data used in previous studies is that it includes certain questions—related to the respondent's adolescent environment—that can be used to approximate the intergenerational transmission of civic values. Specifically, respondents are asked the following four questions with respect to their adolescence: Were your parents involved in civic or political organizations? Was it usual to discuss politics at your home or at school? Was there some person who affected your way of political thinking? Was there some event that had this effect? Similar questions are used in the works of other authors who seek to capture and analyze the transmission of family traits (Quintelier, 2007; Alessina and Giuliano, 2011).

In order to asses the strength of the intergenerational transmission, I combine these measures in two ways. First, I combine in a single variable all the answers given to the different intergenerational transmission questions, such that a higher number corresponds to stronger transmission of civic values. This variable takes values from 0 to 10, where values below five account for an 83%. Second,

I consider separately each of the four intergenerational transmission questions listed above, coding them per convention in the cultural transmission literature (Bisin and Verdier, 2000; Bowles, 2007): *vertical transmission* (political discussion or parents' participation in civic associations during respondent's adolescence: nearly 30% of the respondents do not recall discussing politics at home or that their parents were involved with associations during their adolescence; whereas about 7% recall frequently discussing politics or that their parents were involved with associations); *horizontal transmission* (political discussion at school: 6% recall discussing politics at school during adolescence); *personal response* (whether someone affected the respondent's way of political thinking at adolescence: 21% said Yes, and 75% of these identify that person as a relative; CIS 2818, 2009); and *oblique transmission* (whether some experience or event affected the respondent's way of political thinking: about 33% said Yes—many with reference to the country's political transition after the dictatorship).

For dependent variables I follow the literature and interpret as civic awareness any manifestation that could reflect interest in politics or an active engagement in political discussions, demonstrations, or civic associations. Thus I use the following variables to capture civic awareness:

Political emotions: for example, political issues tend to inspire feelings such as commitment, interest, and enthusiasm (30%).

Political interest: which takes one of four values ranging from not interested (33%) to extremely interested in political issues (6%)

Political discussion: which combines in a single variable the extent of political discussion in the respondent's home, friends, and work environments: nearly 20% never discuss politics and only 4% discuss politics frequently with friends or family or at work.

Association membership: being affiliated with or a member of a civic or political association; this variable is defined as the total number of all such associations claimed by the respondent (the median is zero).

Association activity: being an active member of civic associations—for example, by volunteering, giving money, or participating in activities of the organization (again the total number of such associations is used; the median is zero).

Demonstrations: participation (sum of instances) by the respondent in any type of political or civic action during the last 12 months before the survey; examples include buying fair-trade goods, participating in boycotts, signing a petition, and striking or demonstrating in person (the median is zero).

Politically informed: this value is obtained by combining the frequency of newspaper readership, political programs seen on television , radio, or Internet (median is less than once per week).

Voted last elections: 81% of the respondents had done so.

Left-wing: 13.16% of respondents self-identified in this way.

Right-wing: 3.92% of respondents self-identified in this way.

The survey reports two types of information for each individual's education attainment. First, the highest degree studied for (irrespective of completion). From this information it is possible to build a binary indicator variable set equal to 1 if the respondent attended school after doing so was no longer compulsory -i.e. postcompulsory educaton, (and set to 0 otherwise); about half of the respondents attended no more than compulsory schooling. Second, the survey reports years of full-time schooling; the mean and median are (respectively) 12 and 11 years. Finally, the survey reports other sociodemographic information (e.g., religion, working conditions) for each respondent.

2.1 Schooling and the intergenerational transmission of civic values

It is widely believed that parents who stress civic responsibilities are also likely to impart values that encourage schooling. Table 1 presents evidence that is consistent with this belief. In particular, the estimates suggest a positive and significant partial correlation between an individual's educational attainment and the variables capturing the intergenerational transmission of civic values (ITCV) during adolescence.

Insert Table 1 about Here

The table shows the estimated marginal effects of the ITCV on the two schooling measures just described: in the first and second columns, the binary variable indicting whether or not the

respondent has attended postcompulsory schooling (PCS); in the third and fourth columns, years of full-time schooling (YFTS). Columns I and III present the marginal effect of the strength of the ITCV on schooling when using only a single variable to capture the transmission of civic values. In columns II and IV, the ITCV variable is decomposed into four factors as follows: vertical transmission (political discussion or parents' participation in civic associations during respondent's adolescence); horizontal transmission (political discussion at school); personal response (whether someone affected the respondent's way of political thinking); and oblique transmission (whether a particular experience affected the respondent's political thinking). In line with other studies, several additional explanatory variables are included in the regressions: binary variables for gender, religiosity, age, an interaction of age and gender and regional dummies.

Overall, the estimated coefficients shown in Table 1 suggest that, ceteris paribus, children of politically aware or civically engaged parents are more likely to stay in school longer than children raised in other environments. Specifically, a ten percent increase in the overall ITCV strength is associated with a 4.87 percentage point increase in the likelihood of having attended postcompulsory schooling and with an increase of 0.47 years of full-time schooling, all other things equal. Similarly, a point increase in vertical (resp., horizontal) transmission implies an increase of nearly 6 (resp., 5) percentage points in the likelihood of having attended postcompulsory schooling and with an increase of about 0.6 (resp., 0.3) years of full-time schooling.

Moreover, these estimates imply that the civic returns to education are significantly overstated in regressions that do not include the ITCV as an explanatory variable[1].

2.2 Civic returns to education and the ITCV

In what follows I include the intergenerational transmission of civic values as an explanatory variable in the conventional linear model of the civic returns to education. The causal interpretation of the resulting estimates rest on the assumption that these additional variables truly capture the unobservable factors that jointly determine civic behavior and educational attainment.

[1]Let the linear predictor be $L(Y|S,T) = \gamma_0 + \gamma_1 S + \gamma_2 T$, where Y denotes civic outcomes, S schooling and T transmission. Then $L(Y|S) = L(L(Y|S,T)|S) = \gamma_0 + \gamma_1 S + \gamma_2 L(T|S) = (\gamma_0 + \gamma_2\lambda_0) + ((\gamma_1 + \gamma_2\lambda_1))S$ and $L(T|S) = \lambda_0 + \lambda_1 S$, where L is the linear projection. The estimates in Table 1 suggest that $\lambda_1 > 0$, so given that $\gamma_2 > 0$,(i.e., that transmitting civic values to one's children encourages civic awareness in their adulthood), the implication is that the effect of schooling on civic outcomes is overstated when the ITCV is omitted.

Table 2 presents the estimated coefficients of the variables of interest—schooling and ITCV—in regressions considering different dependent variables recovering civic outcomes. Columns I and IV show the marginal effect of schooling on civic awareness when the intergenerational transmission of civic attitudes is omitted from the regressions: schooling is measured as the binary variable for postcompulsory schooling in column I and as years of full-time schooling in column IV. Columns II and III (and columns V and VI) show the marginal effect of schooling and of the ITCV when each measure is considered as an independent variable. Comparing the schooling estimates in columns I and II or in IV and V gives one a sense of the bias built in to traditional analyses of the schooling effect on civic behavior.

Insert Table 2 about Here

Consistently with the previous findings, Table 2's estimates suggest that civic returns to education are significantly overstated in models that do not include the intergenerational transmission of civic values. First, the marginal effect of schooling on political discussion decreases by nearly half, from 1.13 to 0.59, when the ITCV is included in the regression; likewise, the marginal effect of schooling on demonstrations decreases nearly 40%, from around 0.5 to 0.3. Second, the results indicate that the strength of the ITCV at adolescence plays a meaningful role in the level of civic awareness exhibited later in life: the marginal effect of this factor is positive and statistically significant in all the civic outcomes considered. That finding is consistent with family traits playing a significant role in enhancing civic attitudes (Kymlicka and Norman, 1994; Gutmann, 1999). Finally, despite the significant reduction in its point estimate value, the coefficient for civic returns to education continues to be positive and significant in most cases. In other words, additional schooling enhances civic attitudes even when the ITCV effect is controlled for. This result lends support to the notion that, in democratic societies, schooling strengthens civic behavior.

Table 3 shows the estimated coefficients of a regression that includes as independent variable the postcompulsory schooling dummy variable and decomposes the transmission of civic attitudes into the different channels through which they could be transmitted during adolescence: vertical transmission (political activity of parents), horizontal transmission (political discussion at school); personal influence (someone affecting the respondent's way of political thinking), and oblique transmission (a particular experience or event affecting the respondent's way of political thinking). The

qualitative conclusions are similar to those in Table 2. However, it is interesting that the vertical transmission of civic attitudes plays a significant role in most of the civic awareness measures considered. This finding is consistent with the idea that many traits are acquired by imitating the behavior of parents, and such behavior includes civic participation (Bisin and Verdier, 2000).

Insert Table 3 about Here

Overall, the results reported so far are consistent with what is usually claimed about how additional schooling and the intergenerational transmission of civic values affect civic outcomes. However, one could still argue that the newly added variables do not truly capture the hypothesized unobservables that jointly determine civic behavior and schooling. When such unobservable factors are difficult to measure, the alternatives proposed in the literature are commonly based on the instrumental variables approach.

3.- PROXIMITY OF POSTCOMPULSORY SCHOOLS

An alternative strategy for assessing whether the estimates reflect the causal effects of additional education on civic awareness is by means of an instrumental variables approach. In this paper I rely on the geographic availability of postcompulsory educational institutions as an instrumental variable. Specifically, I use the number vocational and precollege educational institutions in the respondent's province at age 14 (recall that all respondents in the subsample turn 14 between 1969 and 1990).

Several authors have suggested that the geographic availability of educational institutions may serve as a valid instrument for additional schooling. After all, if the proximity of educational institutions increases their accessibility then side effects could include reduced costs of attending and thus increased education attaintment—especially for students who are subject to higher opportunity costs (Card, 1995; Rouse, 1995; Kling, 2001). Furthermore, since the end of the 1960s Spain has attempted to increase the fraction of its population that earns a postcompulsory schooling degree, although that fraction continues to be one of the lowest in all the OECD countries. During this period the government has passed a series of school reforms and has increased the number of postcompulsory schooling institutions—which nearly doubled between 1970 and 1980. In light of

this increased availability, the costs of postcompulsory schooling should decrease and so attendance should increase.

In order to build the instrumental variable I use printed publications of the Ministry of Education (Estadísticas de la Educación en España), which reports the number of educational institutions in each province. There were some difficulties in harmonizing data before 1968 and after 1990. In the prior period, the statistics for vocational schools are ambiguous because there were so many different classifications. In 1990, schooling became compulsory for an additional two years (increasing the age from 14 to 16); this naturally affected the age of entrance to postcompulsory schooling. For these reasons I have used only the number of vocational and precollege institutions that existed between 1969 and 1990.

The instrumental variable assigns to each respondent the number of institutions in her province in the year she turned 14. Hence this research strategy identifies the relation between schooling and civic behavior only for students who turned 14 between 1969 and 1990 and their postcompulsory schooling behaviour was affected by the proximity of precollege institutions (the would-be dropouts).

Table 4 presents the effect of the number of vocational/precollege institutions on postcompulsory schooling and on years of full-time schooling. This regression constitutes the first stage of a two-stage least-squares (2SLS) procedure.

Insert Table 4 about Here

The results in Table 4 indicate that the number of vocational/precollege institutions in the province of the respondent at age 14 has a plausibly signed and statistically significant effect on post-compulsory schooling and also on years of full-time schooling. Specifically, each additional vocational/precollege institution in the respondent's province is associated with an increase of 0.03 percentage points in the likelihood of postcompulsory schooling and with an increase of about 0.3 years in full-time schooling (similar to Dee, 2004).

Observe also that the partial correlation between the number of postcompulsory institutions and the variables recovering the ITCV is not significant (with a minimum p-value near 0.3). This is important because the proximity of postcompulsory institutions would not be a valid instrument if it were significantly associated with the transmission of civic values: if those communities that encourage civic awareness via ITCV also encourage more schooling by promoting postsecondary

education, then the proposed instrumental variable would be incapable of generating plausibly exogenous variation in attained schooling. Thus, the results reported in Table 4 are consistent with the maintained assumption that the geographical availability of postcompulsory educational institutions is a valid source of exogenous variability in education attainment.

Table 5 presents the results from a 2SLS regression in which the different civic awareness measures are the dependent variables of interest while postcompulsory schooling and years of full-time schooling are endogenous regressors. In this regression, the excluded instrument is the number of postcompulsory educational institutions (vocational or precollege schools) located within the respondent's province at the age of14.

Insert Table 5 about Here

Overall, the estimates in Table 5 confirm the results discussed in Section2 for those would-be dropouts turning 14 between 1969 and 1990: the strength of the intergenerational transmission of civic values at adolescence increases the individual's civic engagement in adulthood and, conditional on this variable, additional schooling has significant effect on most of the civic awareness measures considered. Much as in the findings of Dee (2004) and Milligan et al. (2004), the estimated effects are larger than those based on ordinary least squares (OLS), though the point differences should be expected given the greater sampling variation associated with 2SLS estimates. Another possible reason for the larger point estimates can be found in the literature on schooling and wages, where it is argued that the estimated effects (on would-be dropouts) in the margin are generally larger than the estimates obtained for individuals in the mean of attained schooling (Card, 1995; Kling, 2001). In other words, the larger point estimates of the 2SLS versus OLS regressions may indicate that the schooling effect on civic attitudes is larger, in particular, for the nonrandomly chosen subset of individuals identified by the instruments (i.e., the would-be dropouts).

Table 6 presents the estimates after decomposing the transmission of civic attitudes into its four different channels.

Insert Table 6 about Here

Columns I and II show that the strength of (respectively) vertical and horizontal transmission has a positive and significant effect on civic outcomes. Columns III and IV show that most civic

outcomes likewise improve when the respondent had encountered, during adolescence, a personal relation or some event that affected the individual's political way of thinking. Finally, the impact of schooling (first, unnumbered data column) remains positive and significant in most of the civic awareness measures considered.

In short, all the results presented so far suggest that both educational attainment and the ITCV are needed to account adequately for levels of civic awareness.

In the next section I use a model of cultural transmission in order to assess the relative importance of family traits (vertical transmission) or schooling for strengthening civic awareness later in life.

4.- SCHOOLING VS ITCV

The governments of several EU countries have recently intervened in the debate by mandating that citizenship be taught in the compulsory schooling curricula[2]. This development has triggered a renewed discussion of the government's role in promoting civic or moral values. On the one hand, some believe that the government's role in education should not extend to civic or moral education, which is viewed as the province of families. In this sense, the observed positive correlation between schooling and civic behavior may be seen as indicating that public education as currently structured is already effective—that is, without curricular interventions—at promoting good citizenship[3]. On the other hand, those who support government initiatives to teach citizenship claim that families or communities tend to transmit their own particular viewpoints to the exclusion of competing alternatives. Thus, Gutmann (Kymlicka and Norman, 1994) remarks that "education for democratic citizenship ... involves 'equipping children with the intellectual skills necessary to evaluate ways of life different from that of their parents'."

[2]For example: England (in 2002) added instruction in citizenship to the curricula; Italy (in 2004) introduced some topics in citizenship education to its compulsory curricula for primary and early secondary students; and both Belgium (in 2006) and Spain (in 2007) mandated the specific teaching of certain subjects related to citizenship and democracy

[3]As claimed by different civic virtue theorists, this has been an increasingly predominant view since the mid-20th century and one that has driven governments to adopt a neutral position as regards explicit instruction in citizenship while emphasizing academic achievement in compulsory schooling. Even in institutions of higher education, the teaching of professional ethics has been replaced by instruction of a more technical nature in law, business, and medical schools (Callan, 1997; Flanagan, Hess and Hoye, 2008; Kiss and Euben, 2010; Labaree, 2010).

In this section I try to shed some light on the relative importance of the vertical transmission of civic values with respect to the horizontal transmission (schooling transmission). For this, I follow the discrete cultural transmission model proposed by Bisin and Verdier (2000, 2001) in order to get a sense of the relative importance of the vertical or horizontal transmission of civic attitudes. In this model there are two types of parents -individuals- in society: type a, who are civically aware parents and type b, who are not civically aware. The transmission process consists on both vertical transmission (values transmitted by parents) and horizontal transmission (values transmitted by the child's random encounters with other individuals or institutions that convey type a values). A child reared by civically aware (i.e. type a) parents could end up being either of type a or type b in adulthood; similarly, individuals raised by type b parents could turn out to be either type b or type a.

Let π_s^{aa} be the transition probability that a child reared by civically aware parents becomes a civically aware adult, conditional on education level $s = \{c, pc\}$(i.e., compulsory or postcompulsory schooling). This probability has two components: that of the vertical (parental) transmission and that of the horizontal (institutional) transmission. Let π_s^{ba} be the transition probability that a child raised by civically unaware parents becomes a civically aware adult. Note that this probability is affected by horizontal transmission only—in other words, there is no vertical transmission of civic values because the child was raised in a type b family. Bisin and Verdier (2000) propose to estimate π_s^{ij} as the fraction of children with type i parents who end up becoming type j adults, where $i, j = \{a, b\}$[4].

I shall take a "difference in difference" (DD) approach to approximating the relative importance of vertical transmission (VT). That is, I define the parameter of interest as

$$DD_{VT} = \left(\pi_c^{aa} - \pi_c^{ba}\right) - \left(\pi_{pc}^{ba} - \pi_c^{ba}\right)$$

where the first component captures the vertical transmission of civic values for those individuals with compulsory schooling and the second component captures the school effect. With respect to the terms in the first parentheses, notice that π_c^{ba} can be viewed as the baseline for horizontal transmission of civic values: this probability is unaffected by vertical transmission (since the children

[4]Ensuring that the law of large numbers enables these fractions to converge to the true probabilities requires the assumption that those characteristics establishing the survey's representativeness did not dramatically change from the previous generation to this one

were reared by type b parents) and captures the lowest level of education (i.e., compulsory schooling). The difference between π_c^{ba} and π_c^{aa} is that we are changing the parents' type from b to a while leaving the school effect fixed. Because parents of type a transmit civic attitudes, π_c^{aa} includes both, the vertical and horizontal transmission. Therefore, the difference between π_c^{aa} and π_c^{ba} captures the vertical transmission of civic values for individuals with compulsory schooling. In contrast, the difference between π_{pc}^{ba} and π_c^{ba} recovers the school effect independent of vertical transmission: how an increase in schooling affects the probability that children reared by type b parents becomes type a adults. Altogether, then DD_{VT} captures the effect of vertical transmission on civic attitudes net of the schooling effect: hence a positive DD_{VT} indicates that vertical transmission (i.e., family traits) dominates over the schooling transmission.

Table 7 presents the estimates of the measures just defined : column I reports π_s^{aa}, for $s = \{c, pc\}$,the proportion of children born in civically aware families who become civically aware adults; column II report the effect of horizontal transmission, that is π_s^{ba}: the proportion of children born in civically unaware (type b) families who become civically aware (type a) adults and column III reports the effect of vertical transmission (i.e., $\pi_s^{aa} - \pi_s^{ba}$). Finally, column IV reports the estimate of DD_{VR} together with its standard deviation.

Insert Table 7 about Here

Overall, Table 7 suggests that family traits (vertical transmission) have a greater effect than does additional schooling on civic attitudes in adulthood. First of all, the baseline level of horizontal transmission is 34.2 "probability points"—in other words, 34.2% of those who are raised by type b parents (and have compulsory schooling only) become type a adults. Ceteris paribus, 58.5% of those raised by type a parents become type a adults. So if the main difference between these types of individuals is the type of family in which they were born, then the parents' transmission of civic attitudes accounts for 24.3 probability points; that is, vertical transmission increases the baseline probability by nearly three fourths. Second, the school effect on the likelihood that an individual raised in a type b family becomes a type a adult is equal to $\pi_{pc}^{ba} - \pi_c^{ba}$, which amounts to 12.9 probability points. In sum: vertical (family) transmission increases the probability that an individual born to type b parents becomes a type a adult by 24.3 percentage points, but school transmission increases that same probability by only 12.9 percentage points. The net effect, the

difference between these two values is 11.4, which is statistically significant. That is, the results suggest that vertical transmission (via family traits) has a stronger effect than does the schooling effect on the extent of civic attitudes later in life.

CONCLUSIONS

This empirical contribution to the literature seeks evidence on whether additional schooling is effective at promoting civic behavior. There is extensive evidence of a strong correlation between education attainment and civic attitudes, which has been used to argue that schooling is an appropriate channel for improving citizenship. However, a number of authors have pointed out that the strong correlation could reflect other, unobservable factors that drive both schooling and civic outcomes—such as the intergenerational transmission of civic values (ITCV), a factor that most surveys fail to address.

This paper employs a Spanish survey that includes information allowing me to approximate the ITCV at adolescence. The results suggest that this vertical transmission significantly affects civic engagement in adulthood. Specifically, I follow two empirical approaches to this issue. First, I include measures of the ITCV as independent variables, thereby following the conventional approach to analyzing civic returns to education. Second, I follow an instrumental variables approach by using the geographical availability of postcompulsory institutions as a plausibly exogenous variation in schooling levels while conditioning on the intergenerational transmission of civic attitudes. The results suggest that both schooling and ITCV at adolescence enhance civic awareness. I conclude by establishing, within the framework of a cultural transmission model, that vertical transmission (family traits) of civic awareness could be significantly stronger than that of schooling transmission.

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Table 1: Marginal effect of intergenerational transmission of civic values on schooling

	PCS		YFTS	
	I	II	III	IV
Transmission of civic attitudes	0.0487***		0.473***	
	(0.0110)		(0.0701)	
Decomposition				
Vertical transmission		0.0561***		0.580***
		(0.0098)		(0.106)
Horizontal transmission		0.0496***		0.271***
		(0.0180)		(0.163)
Some person affected way of thinking		0.0143		-0.0690
		(0.0228)		(0.324)
Some event affected way of thinking		0.0417		1.049***
		(0.0433)		(0.272)
N		965		965

Notes: All models include a binary indicator for state of birth, gender, religion, and age as well as an age–gender interaction variable. Standard errors (clustered by state) are given in parentheses. PCS=postcompulsory schooling; YFTS = years of full-time schooling; *10%,**5%,***1%;

Table 2: OLS estimates of the effect of schooling and ITCV on civic awareness.

	Postcompulsory schooling			Years of full-time schooling		
	PCS	PCS	ITCV	YFTS	YFTS	ITCV
Dependent Variable	I	II	III	IV	V	VI
Political emotions	0.1026***	0.026	0.068***	0.1478***	0.0070***	0.066***
	(0.0296)	(0.025)	(0.004)	(0.0020)	(0.0020)	(0.0046)
Political interest	0.4359***	0.2532***	0.1632***	0.0532***	0.0343***	0.1593***
	(0.0535)	(0.0505)	(0.0091)	(0.0052)	(0.0041)	(0.0041)
Political discussion	1.133***	0.5982***	0.4784***	0.1138*	0.0572***	0.4804*
	(0.217)	(0.1574)	(0.031)	(0.0238)	(0.0167)	(0.0288)
Association membership	0.5376***	0.3802**	0.1407***	0.0611***	0.0448***	0.138***
	(0.1391)	(0.1313)	(0.021)	(0.0167)	(0.0155)	(0.0205)
Association activity	0.7608**	0.5282**	0.2079***	0.0719**	0.0471*	0.2113***
	(0.2631)	(0.2453)	(0.0156)	(0.0274)	(0.0250)	(0.0132)
Demonstrations	0.4944***	0.3019***	0.172***	0.050***	0.0296**	0.173***
	(0.1107)	(0.0866)	(0.075)	(0.0133)	(0.011)	(0.0080)
Politically informed	1.628***	1.196***	0.3899***	0.1881***	0.1434**	0.3802***
	(0.1742)	(0.1756)	(0.0257)	(0.0179)	(0.0249)	(0.0221)
Voted last elections	0.0511**	0.0348	0.0146**	0.0067*	0.0050	0.0139**
	(0.023)	(0.0292)	(0.0064)	(0.0335)	(0.004)	(0.0066)
Left wing	0.0274**	0.0006	0.0239***	0.0057***	0.003**	0.0225***
	(0.010)	(0.011)	(0.0048)	(0.0015)	(0.001)	(0.0044)
Right wing	0.0038	−0.0025	0.0057**	0.0003	−0.0003	0.0057**
	(0.009)	(0.009)	(0.0025)	(0.001)	(0.001)	(0.0025)

Notes: All models include a binary indicator for state of birth, gender, religion, and age as well as an age–gender interaction variable. Standard errors (clustered by state) are given in parentheses. PCS=postcompulsory schooling; YFTS = years of full-time schooling; *10%,**5%,***1%;

Table 3: Marginal effect schooling and ITCV transmission channels.

			Transmission Channel		
				Influenced	Influenced
Dependent Variable	PCS	Vertical	Horizontal	by Person	by Event
Political emotions	0.0273	0.0675***	0.0567**	0.1006**	0.0755***
	(0.0248)	(0.0151)	(0.0270)	(0.0435)	(0.0226)
Political interest	0.2535***	0.1746***	0.1076***	0.0898	0.3397***
	(0.0479)	(0.0161)	(0.0312)	(0.0642)	(0.0498)
Political discussion	0.5951***	0.5373***	0.4175***	0.4150**	0.4413**
	(0.1597)	(0.0483)	(0.0747)	(0.1634)	(0.1783)
Association membership	0.3854**	0.1636***	-0.0178	0.1873**	0.4606***
	(0.1290)	(0.0550)	(0.0753)	(0.0753)	(0.0735)
Association activity	0.5402**	0.1724**	0.0380	0.3665**	0.7318***
	(0.2391)	(0.0612)	(0.0885)	(0.1531)	(0.1377)
Demonstrations	0.3104***	0.1541***	0.0445	0.2979**	0.5187***
	(0.0851)	(0.0386)	(0.0631)	(0.1133)	(0.1079)
Politically informed	1.1984***	0.3201***	0.3198***	0.2373	1.0547***
	(0.1734)	(0.0851)	(0.0699)	(0.3216)	(0.1553)
Voted last elections	0.0362	0.0101	0.0026	0.0572**	0.0323**
	(0.0296)	(0.0141)	(0.0099)	(0.0202)	(0.0126)
Left wing	0.0017	0.0333***	-0.0197**	0.0291	0.1047***
	(0.0112)	(0.0088)	(0.0089)	(0.0200)	(0.0218)
Right wing	-0.0021	0.0023	0.0061	0.0137	0.0129
	(0.0083)	(0.0067)	(0.0063)	(0.0111)	(0.0104)

Notes: All models include a binary indicator for state of birth, gender, religion, and age as well as an age–gender interaction variable. Standard errors (clustered by state) are given in parentheses. PCS=postcompulsory schooling; *10%,**5%,***1%;

Table 4: Education attainment and geographical proximity of postcompulsory institutions

	PCS		YFTS	
	I	II	III	IV
Number of PC institutions	0.00033***	0.00033***	0.00262***	0.00256***
	(0.00005)	(0.00005)	(0.0005)	(0.0005)
Transmission of civic attitudes	0.0472***		0.4352***	
	(0.0107)		(0.0620)	
Decomposition				
Vertical transmission		0.0562***		0.5673***
		(0.101)		(0.1194)
Horizontal transmission		0.0480***		0.2514
		(0.0167)		(0.1536)
Some person affected way of thinking		0.01245		-0.1519
		(0.0227)		(0.2803)
Some event affected way of thinking		0.0328		0.8833***
		(0.0434)		(0.2794)

Notes: All models include a binary indicator for state of birth, gender, religion, and age as well as an age–gender interaction variable. Standard errors (clustered by state) are given in parentheses. The F-statistic for all four columns is 0.00. PCS = postcompulsory schooling; YFTS = years of full-time schooling. *10%,**5%,***1%;

Table 5: Marginal effect of education (two measures of schooling) and family (ITCV) in adolescence on adult civic awareness, 2SLS regression

	I		II	
Dependent Variable	PCS	ITCV	YFTS	ITCV
Political emotions	-0.3330**	0.0849***	-0.0415*	0.0872***
	(0.1516)	(0.0067)	(0.0224)	(0.0085)
Political interest	0.7515***	0.1381***	0.0937***	0.1328***
	(0.1780)	(0.0107)	(0.0229)	(0.0085)
Political discusison.	3.471*	0.3415***	0.4329*	0.3168**
	(1.742)	(0.1021)	(0.2426)	(0.1098)
Association membership	-0.2782	0.1743***	-0.0347	0.1763***
	(0.9076)	(0.0336)	(0.1113)	(0.0386)
Associaton activity	1.765	0.1526**	0.2202	0.1400*
	(1.371)	(0.0671)	(0.1906)	(0.0810)
Demonstration	0.7881**	0.1497***	0.0982**	0.1441***
	(0.2819)	(0.0197)	(0.0417)	(0.0233)
Politically informed	0.4956	0.4292***	0.0618	0.4256***
	(1.191)	(0.0708)	(0.1486)	(0.0767)
Voted last elections	0.4041***	-0.004	0.0504***	-0.0067
	(0.1127)	(0.0074)	(0.0189)	(0.0093)
Left wing	0.2997*	0.0090	0.0374	0.0069
	(0.1677)	(0.0096)	(0.0235)	(0.0116)
Right wing	-0.2723***	0.0189***	-0.0339***	0.0208***
	(0.0405)	(0.0037)	(0.0069)	(0.0039)

Notes: All models include a binary indicator for state of birth, gender, religion, and age as well as an age–gender interaction variable. Standard errors (clustered by state) are given in parentheses. ITCV = intergenerational transmission of cultural values; PCS

= postcompulsory schooling (indicator variable set equal to 1 for respondents who attended school after the compulsory age and set to 0 otherwise); YFTS = years of full-time schooling.

Table 6: Marginal effect schooling and transmission of civic values on civic awareness, 2SLS

		Transmission channel			
Dependent Variable	PCS	Vertical	Horizontal.	Influenced by Person	Influenced by Event
		I	II	III	IV
Political emotions	-0.3323**	0.0872***	0.0742***	0.1067**	0.0862***
	(0.1474)	(0.0198)	(0.0191)	(0.0484)	(0.0251)
Political interest	0.6784***	0.1514***	0.0856**	0.0871	0.3117***
	(0.1608)	(0.0197)	(0.0354)	(0.0594)	(0.0483)
Political discussion	3.5125*	0.3792***	0.2730*	0.3987**	0.3005
	(1.809)	(0.1133)	(0.1568)	(0.1496)	(0.2758)
Association membership	-0.4120	0.2100***	0.0197	0.2063**	0.50407***
	(0.9281)	(0.0384)	(0.0976)	(0.0761)	(0.0991)
Association activity	1.4828	0.1231**	-0.0087	0.3712**	0.7142***
	(1.3618)	(0.0620)	(0.1429)	(0.1412)	(0.1591)
Demonstrations	0.6161**	0.1405***	0.0277	0.3051**	0.5016***
	(0.2678)	(0.0417)	(0.0675)	(0.1123)	(0.1098)
Politically informed	0.1719	0.3877***	0.3711***	0.2891	1.0705***
	(1.1387)	(0.1156)	(0.0837)	(0.3031)	(0.1751)
Voted last elections	0.3907***	-0.0101	-0.0144	0.05167**	0.0156
	(0.10681)	(0.0121)	(0.01449)	(0.0216)	(0.0211)
Left wing	0.2683*	0.0191*	-0.0334**	0.02633	0.0883***
	(0.1582)	(0.0113)	(0.0125)	(0.0205)	(0.0223)
Right wing	-0.2755***	0.01780**	0.0196**	0.0181*	0.02424
	(0.0454)	(0.0069)	(0.0067)	(0.0105)	(0.0149)

Notes: All models include a binary indicator for state of birth, gender, religion, and age as well as an age–gender interaction variable. Standard errors (clustered by state) are given in parentheses. PCS = postcompulsory schooling.

Table 7: Family traits vs schooling

	I	II	III	IV
	Transition	Horizontal	Vertical	DD_{VR}
		Transmission	Transmission	
	π^{aa}	π^{ba}	I-II	
Schooling				
Compulsory	0.585	0.342	0.243	0.114*
Postcompulsory	0.735	0.471		(0.069)
Additional School Effect		0.129		

Note: Type a : civically aware individuals; π^{aa}: probability of child type a conditional parent type a; Horizontal transmission, π^{ab}: probability of child type a conditional parent type b; * significance 10%.all the other values are significant at a 1%.