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THE HIDDEN CURRICULUM AND SOCIAL PREFERENCES

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The Hidden Curriculum and Social Preferences †

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Abstract:

This paper examines the effects of school curricula on subsequent preference formation. The estimation results, using Japanese data, show that the actual curriculum at public elementary schools varies widely from area to area and is associated with preference formation. Specifically, pupils who have experienced participatory/cooperative learning practices are more likely to be altruistic, cooperative with others, reciprocal, and have national pride. In contrast, the influence of education emphasizing more on anti-competitive practices is negatively associated with these attributes. Such contrasts can also be seen for other preferences regarding government policies and a market economy. The findings imply that elementary school education, as a place for early socialization, plays an important role in the formation of life-long social preferences.

Keywords: cultural transmission, socialization, preference formation, hidden curriculum, elementary education, Japan
JEL codes: D83; I21; Z13

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The Hidden Curriculum and Social Preferences

1. Introduction

An increasing number of social scientists are interested in how culture is transmitted between people within a society. In the so-called cultural transmission (or socialization) field, many studies have documented the socialization mechanisms of preferences, beliefs, and/or norms.[1] Such mechanisms can be broadly classified into two channels: direct vertical socialization (through family) and horizontal and oblique socialization (through, for example, friends, neighbors, teachers, or mass media). Among the latter's mechanisms, school education is considered an effective measure for social integration by promoting a common culture in society (Gradstein and Justman, 2005; Alesina and Reich, 2013). History also tells us that education has been a device to unify people in both the East and West.[2]

Despite such academic interests and historical evidence, few empirical studies have identified the causal linkage between education and preference formation. This might be ascribable to empirical difficulties associated with the estimation of the causal impact of school education. For instance, when examining the role of educational content/practices, it is possible that the content/practices that the students receive at school are an endogenous outcome of

[1] See Bisin and Verdier (2011) for an extensive review of the literature in this field.
[2] A typical example is wartime education. See, for instance, Anderson (1959) for education in Japan during the Second World War.

their (or their parents') school choice. This potential self-sorting makes it difficult to isolate the effects of school education. In addition, sufficient variation in educational content/practices might not be available in a particular country because school education content, especially at public schools, is usually regulated by a national education policy. In this case, distinguishing the effects of education from other macro factors is very difficult, unless education policy varies within a country or data covering multiple countries are available.

Against this backdrop, however, several studies deal well with this difficulty. Algan et al. (2013) examined whether teaching practices at school affect students' beliefs by exploiting within-school variations in educational practices using school-survey data covering multiple countries. They found a positive causal relationship between "working-in-groups" practices and students' beliefs about cooperation and trust. Cantoni et al. (2014) utilized cohort-regional variations in educational content at senior high schools in China. They studied the role of school curricula upon students' beliefs and found that changes in Politics curriculum alter students' ideological beliefs. In addition, Aspachs-Bracon et al. (2008) and Clots-Figueras and Masella (2013) explored the effect of language education on national identity, exploiting reforms in language educational policies in an autonomous community in Spain. Their results indicate that language education exerts an influence on national identity formation.[3]

[3] Some indirect evidence also exists regarding the role of educational content/practices. For

This paper also examines the causal impact of school curricula on the formation of preferences and beliefs, focusing on the "hidden curriculum." The term "hidden curriculum" refers to beliefs, attitudes, or values that underlie educational content/practices, and which are transmitted to students consciously or subconsciously. In other words, the hidden curriculum is what mainly influences students' non-cognitive or non-academic abilities and is usually contrasted with the official academic curriculum, which aims to develop students' cognitive abilities such as literacy and numeracy.[4] To examine the hidden curriculum's influence on preference formation, we exploit "exogenous" variations in actual educational content/practices in Japanese elementary schools.

In Japan, educational content/practices at elementary schools are stipulated by the curriculum guideline set out by the Japanese government, and all public schools aim to provide uniform education based on these guidelines. However, the actual curriculum, particularly the non-academic curriculum, differs with the area. This situation provides a desirable basis for identification. Because

instance, several authors have found that number of years of education (quantity of schooling) is associated with civic participation (Milligan et al., 2004; and Helliwell and Putnam, 2007) or political preferences (Friedman et al., 2011). In addition, Hryshko et al. (2011) found a relationship between parents' education and the risk attitude of their children.

[4] In education literature, the term "hidden curriculum" is not necessarily used in the same sense as our definition. For instance, some studies define hiddenness based on degree of intentionality. In this regard, however, the fact remains that the hidden curriculum, whether a clear intention underlies it or not, is related to non-cognitive/non-academic outcomes such as beliefs, attitudes, values, or norms (Giroux and Purpel, 1983; Kelly, 2009). In addition, from an empirical perspective, any non-cognitive education cannot be clearly identified whether it was set intentionally, or whether its results are exactly as intended. Therefore, our definition makes no distinction regarding the presence or the absence of intention.

people believe that curricula at public elementary schools are uniform, educational content/practices should not serve as a consideration for parents in choosing a school. In fact, as will be shown later, between-school disparities in academic achievements at elementary education are surprisingly smaller in Japan than in other developed countries, suggesting that Japanese public elementary schools offer a homogeneous academic curriculum.

In addition, the similarity of educational content/practices across neighboring schools also reinforces the situation. In Japan, each prefectural education board in principle administers educational provision independently, and prefectural education boards have final approval in recruitment, transfer, and dismissal of all public school teachers and principals. As a consequence, actual educational content/practices become similar among neighboring schools in a prefecture, and this makes it difficult for parents to recognize that educational content/practices do in fact vary between schools. Furthermore, almost all elementary schools are operated publicly (about 99%), and a zoning rule that automatically assigns pupils to the school in their school district is strictly applied to all public elementary schools. Therefore, exploiting variations in actual educational content/practices within elementary education enables us to avoid a self-sorting problem and identify schooling's effects on preference formation.

In addition to the identification issue, this study contributes to the existing literature in three ways. First, the actual curriculum we explore includes a

wide range of educational content/practices: aside from group learning practices (Algan et al., 2013) and political education (Cantoni et al., 2014), other moral, character, peace, and economic lessons are also examined in our analysis. Furthermore, the outcomes in this study cover a broad range of social, economic, and political preferences/beliefs, including components of social capital such as beliefs in trust and cooperation, and reciprocity. Thus, this study can provide a better understanding of the role of education in socialization from a broad perspective.

Second, we focus on educational content/practices during *elementary* education, whereas our main references, Algan et al. (2013) and Cantoni et al. (2014), documented evidence on the role of *secondary* education in socialization. Recently, non-cognitive skills such as attitudes, beliefs, and personalities have gained attention in the empirics of human capital theory, and several studies emphasize the importance of childhood in the formation of such skills.[5] Therefore, stages of education also matter in preference formation, and elementary education, as an early stage of socialization, could play a decisive role.

Third, this study examines people's preference/belief formation years or decades after the completion of education, using a sample of people in their 20s to 50s. Algan et al. (2013) quantified contemporaneous effects of teaching practices

[5] For instance, James J. Heckman, among others, is a leading advocate for this view (Heckman and Krueger, 2003).

using a sample of early-teen students,[6] and Cantoni et al. (2014) examined the influence of educational content at senior high schools on ideology among university students. Consequently, their works are completely silent on what would happen after completing education, after entering the labor market, or after gaining a wide variety of experience in life. Whether, and to what extent, the effect of education on preferences/beliefs persists is of high interest for policymakers as well as social scientists, and we tackle this question.

The rest of the paper is organized as follows. Sections 2 and 3 describe educational content/practices in Japan and the dataset used in the analysis. Section 4 presents the empirical framework and discusses the validity of its identification assumptions. Section 5 reports the estimation results, which show that great regional differences exist in actual educational content/practices in Japan, and that the actual curriculum has a non-negligible influence on social preference formation. In particular, education emphasizing participatory and cooperative learning is effective for cultivating positive social preferences, and various checks show that the findings are robust after eliminating possible confounding factors or potential reverse causality. Section 6 concludes the paper.

[6] Algan et al. (2013) also conducted a cross-country macro analysis in which dependent variables are country-averaged values (the sample mainly comprises an adult population). However, because the teaching practices they exploited are those used for younger generations, their estimates might not capture the direct influences of past education on subsequent preference formation, and might also confound reverse causality between beliefs held by older generations and recent educational policies.

2. Educational Content and Practices in Japan

The content and practices of school education in Japan are basically stipulated in the school curriculum. For elementary through high school, the curriculum is based on the School Curriculum Guidelines (*Gakushu Sidou Youryou*) of the Ministry of Education, Culture, Sports, Science and Technology (MEXT).[7] However, while all public schools seem to provide uniform education based on the same guidelines, actual educational content/practices are not identical.

For instance, while elementary schools, almost without exception, hold a school sports meet every year in which pupils are separated into two teams and compete in several athletic sports, regional or generational differences exist in the actual activities. Usually, pupils compete in a 50-meter footrace with five or six peers, and some points are added to the teams of the pupils who win the first and second prizes. However, in some cities, there are no footraces at school sports meets. Even if there are footraces, teachers do not rank pupils' finishing order. Another example is peace and anti-discrimination education. Almost all elementary schools in Japan offer a school trip for sixth-grade pupils, consisting of multi-day tours, to broaden their knowledge. In western Japan, the destination tends to be Hiroshima or Nagasaki (cities on which the atomic bombs were dropped) to learn the misery of war and importance of peace. Similarly, schools in western Japan tend to provide anti-discrimination education (*dowa kyoiku*) and

[7] Private schools, as well as public schools, are supposed to follow the guidelines, but it is more strictly applied to public schools.

have school assemblies on the atomic bomb day (August 6 or 8). However, no such tendencies are found in other regions.

Besides these practices, there are several region- or generation-specific content/practices, as listed in Table 1. In our original survey, as explained in the next subsection, we investigated people's experience of these 17 contents/practices.

[Table 1]

Note that we focus on these region- and generation-specific educational content/practices, not on nationwide content/practices, because it is impossible to identify the effects of a variable that exhibits no variation. This is merely a practical issue and does not mean that such nationwide practices are of no importance. For instance, greetings while saying "Stand up. Bow. Sit down." before/after class and everyday school cleaning by pupils[8] as well as the school sports meets and school trips are well-known nationwide content/practices in Japan and definitely have an influence on pupils' socialization. A cross-country analysis focusing on such nation-specific educational content/practices may provide interesting insights, enabling us to investigate differences in national character or culture, but such a task is beyond the scope of this study.

[8] Greetings before/after class are a sequence of actions that pupils perform, such as standing up, bowing, and sitting down to show their respect for teachers. Daily school cleaning by students is also a common practice in Japanese schools. Usually, students clean their classroom, school playground, or gymnasium for about 20 minutes before afternoon classes every day.

3. Data

To investigate people's experiences of school education and determine their preferences and beliefs, we carried out an original survey in October 2012. The survey was conducted online by a Japanese market research company[9] under the author's directions. Given the size of our research budget, we set the target number of respondents as 4,500. Then, considering average response rates, the survey company sent invitation e-mails to 14,628 panelists. To ensure sufficient variations among respondents' past educational experiences, we employed quota-sampling based on age, gender, and region (five age categories, two genders, and nine regions),[10] and we obtained 4,709 survey responses. In the analysis, we use a sampling weight so that our sample's age-gender-region distribution is proportional to the actual age-gender-region distribution in Japan. The actual distribution of the Japanese population is calculated from the *2010 Population Census of Japan*.

Table 2 reports sample features such as marital status and education level.

[9] The survey company is MyVoice Communications Inc. It started undertaking Internet surveys in 1998 and had more than one million registered survey panelists as of November 2013. It has a rigorous data quality control system to obtain highly reliable data. For instance, all registrants are checked strictly by examining their registration information, and about one-fourth of new registrants are eliminated beforehand due to inconsistent characteristics or double registration. In addition, the survey panelists are regularly monitored, and the number of surveys in which one panelist can participate is controlled (average frequency in one year is about 13).

[10] The nine regions comprise Hokkaido, Tohoku, Kanto, Hokuriku, Chubu, Kinki, Chugoku, Shikoku, and Kyushu.

The table also presents the same information calculated from national representative data for comparison (Panel B). As can be seen from the table, respondents in our survey are more likely to have a college degree (or higher) than *Labor Force Survey* respondents. This is because our survey was conducted online, and highly educated people have a high tendency to use the Web frequently. In particular, elderly cohorts seem to be more skewed toward the highly educated.

In our empirical analysis, out of the 4,709 respondents, 894 individuals aged 60 and older were excluded. This is partly due to the sample bias concern mentioned above, but mainly due to their educational background: individuals aged 60 and older received their elementary education in wartime or postwar turmoil. The education system has changed significantly during the postwar occupation by the Allied Powers (1945–1952). In addition, 125 respondents who graduated from a private elementary school (3.3% of the sample) and 69 respondents with missing information on some characteristics (1.8%) were also excluded from the analysis. Thus, the sample used in the analysis consists of 3,621 respondents.

[Table 2]

Regarding the content of school education, respondents were asked whether they had experienced the 17 educational contents/practices shown in Table 1. These contents/practices have been employed in some regions (for some

generations) but not in other regions (for other generations), and the regional (generational) disparities are considered to reflect differences in the actual curriculum.

It should also be mentioned that a non-negligible number of respondents answered “do not remember,” as shown in the table. However, this may not be a serious problem. The contents/practices with high rates of “do not remember” answers are those with large regional differences. For example, “school assembly on atomic bomb day” is practiced mainly in western Japan. This is because Hiroshima and Nagasaki are in western Japan, and the school assembly is held during summer vacation to prevent the terrible lessons of the war from being forgotten. Therefore, memories of the school assembly are strongly connected with the date for those who experienced it. Likewise, “emergency drill on September 1” is associated with the Great Kanto Earthquake, which struck on September 1, 1923, and therefore it is mainly practiced in eastern Japan, including the Kanto region. Thus, answering “do not remember” to a content/practice reflects the fact that the respondent received education that placed less emphasis on such content/practice. Therefore, it is reasonable enough to have more than a few respondents answering “do not remember” to such contents/practices, and thus treating “do not remember” the same as “No” seems highly plausible. The potential problem due to such answers will be discussed further in Section 5.2.

4. Empirical Framework

4.1. Empirical Specification

In the analysis, we quantify the impacts of the hidden curriculum of elementary school education ($\boldsymbol{HC}_i$) on the subsequent formation of social preferences ($Pref_i$). Specifically, we estimate

$$Pref_i = \alpha + \boldsymbol{HC}_i\boldsymbol{\beta} + \boldsymbol{X}_i\boldsymbol{\gamma} + \varepsilon_i, \quad (1)$$

where i indexes individuals, $\boldsymbol{X}_i$ is a vector of controls (individual, household, and community/school characteristics), ε_i is an unobserved component affecting preference formation, and α, $\boldsymbol{\beta}$, and $\boldsymbol{\gamma}$ are the parameters to be estimated.

The outcomes of interest are social preferences ($Pref_i$) such as altruism, beliefs in cooperation and trust, and reciprocity. These variables range from one to five, based on respondents' answers to the standard questions to measure these preferences/beliefs (see Table A1).

Regarding the hidden curriculum ($\boldsymbol{HC}_i$), we employ factor analysis to extract factors comprising the hidden curriculum that lie behind actual educational content/practices. The result is shown in Table 3: reported figures are rotated factor loadings obtained by polychoric factor analysis using the principle component factor (PCF) method with an orthogonal Varimax rotation. Considering the Kaiser criterion and the Scree test, five factors are retained. The sensitivity of analysis for the measurement of the hidden curriculum will be checked in Section 5.2.

[Table 3]

The first factor has large loadings for “no display of the national flag” and “no singing of the national anthem.” These practices are thought to be based on reflection of the last world war and to be associated with leftist political thoughts such as anti-war and anti-nationalism. “Teachers’ strike” is also associated with leftist thoughts. Thus, the first factor is referred to as “leftist political thought.” The second factor is strongly related to “no footrace” and “no finishing order.” These practices aim to turn pupils away from competition, and therefore we call this factor “anti-competition.” The third factor mainly consists of “group learning,” “reading before class,” “emergency drill on September 1,” and “target-based evaluation.” We refer to it as “participation & cooperation,” because most of these contents/practices require pupils’ active participation and/or cooperation among pupils. Regarding “target-based evaluation,” it often includes pupils’ behaviors such as compassion toward others and cooperation with others, as well as academic achievement, in the list of evaluation items. The fourth factor is related to “Kolkhoz and Sovkhoz,” “scale evaluation,” “kid’s bank,” and “statue of hard work.” Because these educational contents/practices aim to teach the importance of industriousness, we call this factor “hard work & effort.” The final factor is strongly related to “anti-discrimination education,” “school trip to Hiroshima or Nagasaki,” and “school assembly on atomic bomb day,” and is referred to as “human rights & peace.” Note that “gender-segregated class number”

has small factor loadings for all five factors. Segregating by gender is related to traditional Japanese thought, and this might be the reason why this practice has a relatively large positive loading for Factor 4 (“hard work & effort”) and negative loading for Factor 2 (“anti-competition”) because industriousness is also related to traditional values in Japan.

Figure 1 maps average scores of the five factors by prefecture. As seen in the figure, our proxies for the hidden curriculum vary widely between prefectures. While “leftist political thought” (Panel A), “anti-competition” (Panel B), and “hard work & effort” (Panel D) appear dispersed nationwide, both “participation & cooperation” (Panel C) and “human rights & peace” (Panel E) have a regional tendency whereby the former is more practiced in central Japan and the latter in western Japan. We also observe generational differences for some factors (Table 4). For instance, Factor 4 (“hard work & effort”) varies from generation to generation: elder generations are more likely to receive education emphasizing “hard work & effort.” On the other hand, the average factor scores for Factor 3 (“participation & cooperation”) are higher among younger generations. This implies that a nationwide shift of educational content/practices occurred from “hard work & effort” to “participation & cooperation.”

[Figure 1]

[Table 4]

Regarding other controls (X_i) in Equation (1), guided by empirical

literature, we employ individual characteristics (five-year birth cohort dummies, education dummies, female dummy, interactions between the five-year birth cohort and education dummies, marital status dummies, income category dummies, and household size), family background (parents' education dummies, number of books at home, dummies for living with grandparents at age 15, and number of siblings at age 15), school (or school district) characteristics (class size, dummy for experience of classroom chaos, dummy for teachers' active intervention with bullying, and number of high schools that can be chosen in a school district),[11] and prefecture dummies (current and at the age of 12).

4.2. Identification Issues

A key source of variation used to identify the effects of the hidden curriculum stems from the fact that actual educational content/practices that students experience at public elementary school are exogenous to them. This is mainly due to the following two reasons.

First, in Japan, people believe that educational content/practices provided by public elementary schools are uniform, and hence they do not take educational content/practices into account when choosing a school. While this reflects the fact that all public schools are regulated by the same curriculum guidelines as mentioned in Section 2, it may also be due to the educational administration

[11] Note that school (district) variables are retrospective data directly surveyed from respondents in the same survey.

system. In Japan, public schools are operated on a city/town/village basis in principle and are supervised by education boards (*kyouiku iinkai*). Education boards are organized at two levels (prefecture and city/town/village), and each prefectural education board has the final word on personnel affairs (recruitment, transfer, and dismissal) of all public school teachers and principals in the prefecture.[12] In particular, all personnel transfers in a prefecture are made within a certain region of the prefecture, and therefore, actual educational content/practices in neighboring schools within the prefecture tend to be similar. As shown later in this section, this is confirmed by a simple test using our data. Thus, parents have great difficulty in recognizing the fact that educational content/practices do in fact vary from school to school.

Second, parents generally have no choice over elementary schools in Japan, even if they observe differences in school curricula. This is due to the school district system (zoning rule): all school-age children can enter a public school without examination, but each district has only one public school and children must attend the only school in their school district.[13] Moreover,

[12] The only exceptions are 12 major (government-decreed) cities, where city education boards have authority over personnel issues.

[13] In 1997, the Ministry of Education issued a notice that municipal education boards are allowed to relax the school districts and introduce a school choice system in elementary and junior high schools. As of 2013, about 16% of municipalities have adopted some sort of school choice system in elementary schools. In this regard, our sample consists of people in their 20s to 50s in 2012, and peopled aged 20 (and part of people aged 21) might enter elementary school under a new system. However, the municipalities that have adopted a school choice system by 1998 (the year of elementary school entrance for people aged 20 in our sample) account only for less than 3% of the total municipalities, and the policy change

competition based on entrance examinations generally starts from high school. While public schools constitute about 74% of *high* schools, 99% of *elementary* schools are publicly operated. As a consequence, it is very unlikely that parents select an elementary school in consideration of actual educational content/practices.

However, for those unfamiliar with Japanese elementary education, it may sound far-fetched that educational content/practices students receive at school are not a result of self-selection. In many developed countries, the achievement gap between socioeconomic groups has been an issue of social concern. In Japan as well, various social scientists point out that the disparity in academic achievement among elementary students has been increasing. In this regard, however, this achievement gap is often attributed to differences in family backgrounds, rather than school education (Kariya and Shimizu, 2004; Shimizu, 2007; and Matsuoka et al., 2014). In fact, between-school disparities in academic achievements at the elementary-education level are surprisingly small in Japan, compared with other developed countries (see Table A2 in Appendix II). Considering together with the fact that the percentage of people choosing a private school is negligible, self-sorting into elementary schools (and therefore educational content/practices) is very unlikely in our context. Thus, exploiting variations in the actual curriculum between elementary schools in Japan enables

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has little influence on our analysis.

us to avoid potential bias due to a self-sorting problem.

On the other hand, we must also consider the possibility that our identification framework fails. One major concern is recall bias, which is a common pitfall when using retrospective data. A typical example is that more recent experiences might remain in respondents' memory. Moreover, when people hold two conflicting cognitions, they might distort one to mitigate the dissonance from the other (issue of cognitive dissonance). In other words, there is a possibility that current preferences distort memories of the past. These issues potentially create another reverse causality problem.

To check this possibility, we conducted a simple test. Given that the formation of preferences/beliefs is strongly affected by experience and environment, it is expected that those who migrated from their places of origin are more likely to change their preferences than those who stayed at their places of origin. This being true and given the issue of cognitive dissonance, answers on past school experience might differ between respondents with migration experience and those without such experience. Using the two-level nested analysis of variance (ANOVA), we compare factor scores between those who are still living in the prefecture where they lived at the age of 12, and those who have migrated out (Table 5). The "group" in the analysis is defined based on the prefecture respondents lived in at the age of 12, and the "subgroup" reflects whether the current prefecture is the same as the prefecture at the age of 12.

[Table 5]

The table shows that for all five factors, the between-group (prefecture at the age of 12) variation in column 1 is always larger than the between-subgroup (same/different prefecture as/from that at the age of 12) variation in column 2, and the *F* statistic indicates rejection of the null hypothesis that no differences exist among factor scores between groups. In contrast, the between-subgroup variation in column 2 is close to the within-subgroup variation in column 3. These results have two important implications. First, the actual curriculum seems to differ greatly with each prefecture but not so much within prefectures. This is consistent with our previous arguments that parents and students do not observe differences in educational content/practices between neighboring schools within a prefecture. Second, living in a different prefecture from that at age 12 bears no relation to the past educational experience respondents reported, implying that memory distortion is less likely. This issue will be further checked in Section 5.2.

5. Empirical Results

5.1. Effect of Education on Social Preferences

We start by estimating the basic specification in Equation (1). Empirical variables used in the analysis are summarized in Table 6, and the estimation results are reported in Table 7. All estimations are implemented with ordinary least-squares (OLS) controlling individual characteristics, family background, school (school

district) characteristics, and prefecture dummies (current and at age 12), as explained in Section 4.2. In addition, we adjust the sampling weight to make our observations proportional to the overall Japanese population distribution.

[Table 6]

[Table 7]

From the estimation results, we see sharp contrasts between "anti-competition" (row 2) and "participation & cooperation" (row 3). T hose who experienced education that implemented participatory/cooperative learning practices are more likely to favor altruistic behavior (column 1), cooperation with others (columns 2 and 3), and reciprocal behavior (column 6). On the other hand, those who experienced education that implemented anti-competitive practices are less likely to favor altruistic behavior (column 1), cooperation with others (column 2), and reciprocal behavior (column 6). Interestingly, the sign of the coefficient differs between the case of positive reciprocity (column 6) and negative reciprocity (column 7), suggesting that those who experienced anti-competitive education prefer to not repay an obligation but to make a countercharge. In addition, a contrast between the two can be seen in the result for "national pride" (the last column): "anti-competition" is negatively associated with national pride, whereas "participation & cooperation" is positively associated with it.

Regarding the magnitude of these influences, coefficient estimates show

that an increase by one standard deviation in “anti-competition” decreases scores of “altruism” by 0.032 (4.2% of the standard deviation), “cooperation: outcome” by 0.031 (4.3%), and “positive reciprocity” by 0.048 (6.6%); and that an increase by one standard deviation in “participation & cooperation” increases the scores of “altruism” by 0.086 (11.2% of the standard deviation), “cooperation: outcome” by 0.042 (5.8%), “cooperation: satisfaction” by 0.061 (7.6%), and “positive reciprocity” by 0.041 (5.7%). For comparison, coefficient estimates on the dummy for college graduates aged between 20 and 24 (not reported here) indicate that there are about 0.3- to 0.6-point statistically significant differences in the scores of these social preferences between junior high-school graduates (reference group) and college graduates, holding other characteristics constant. Thus, the effects of a standard deviation increase in “participation & cooperation” are approximately one-eleventh to one-fifth of these influences, implying relatively small effects of the hidden curriculum. However, in comparison with the results of Algan et al. (2013), our estimates are not too small; rather, they show that an increase in the “students work in groups” variable by one standard deviation increases the belief in cooperation among students by about 2% of the standard deviation.

Regarding the results for “anti-competition,” one might wonder why it has the opposite influence from that of “participation & cooperation,” even though they seemingly aim at a similar goal, i.e., egalitarian education. In this

regard, Kariya (1995) pointed out that in “anti-competition” education, the rank of pupils’ achievements in the class or school is not revealed to pupils because differences in pupils’ achievements are considered to be attributed to differences in teachers’ teaching skills rather than differences in pupils’ natural abilities. In this case, pupils who had anti-competitive education tend to think that people are equal in terms of natural ability and that performing poorly should be attributed to laziness or lack of effort. As a consequence, anti-competitive education may lead people to value self-responsibility and be less concerned about others.

Another explanation can be provided in terms of self-esteem. In the United States, fostering self-esteem has become a major concern in school or at home based upon the belief that self-esteem causes positive outcomes including a rise in academic performance and better social development. However, several studies have found contradictory results: high self-esteem does not improve grades or career achievement nor does it reinforce pro-social behavior (Baumeister et al., 2003). Given that practices such as not declaring a winner in a footrace lead to pupils boosting their self-esteem by giving trophies for participation instead of for winning, inflated belief in own superiority may lead to an uncooperative and nonreciprocal individual, as indeed found in the results given in Table 7.

Turning to the other factors of the hidden curriculum, the coefficient estimates are statistically insignificant except for the effect of “hard work & effort”

on “cooperation: satisfaction” (row 4, column 3) and the effect of “human rights & peace” on “competition” (row 5, column 4). This may not necessarily imply that these factors do not affect the formation of preferences and beliefs. Instead, it may be a result of a lack of variation after eliminating birth cohort or prefecture fixed effects.

5.2. Robustness Checks and Discussion

To check the possibility that the coefficients on the hidden curriculum confound other mechanisms, we run several estimations employing different specifications. For reasons of space, we report only the results for the impacts of “participation & cooperation” and “anti-competition” on altruism (column 1), beliefs in cooperation (columns 2 and 3), and reciprocity (columns 4 and 5). This is because Table 7 shows striking contrasts between the two factors regarding the impact on these preferences and beliefs.

First, in addition to the explanatory variables already controlled for, versions of the School Curriculum Guideline are controlled. Since the end of the Second World War, the Ministry had revised the guidelines nine times (in 1947, 1951, 1956, 1961, 1971, 1980, 1992, 2002, and 2011). These revisions to the guidelines might be correlated with the hidden curriculum, and omitting details of the specific guideline version might cause the coefficient estimates to be biased. Accordingly, we try several specifications including dummies for each version, or

years under each version of the guidelines. Estimation results of the specification with dummy variables (and their interactions with prefecture dummies at the age of 12) are presented in Panel A of Table 8. The results show that coefficient estimates remain virtually unchanged in magnitude. Thus, unobserved heterogeneity among generations due to the revision of the guidelines is less likely to influence our estimates.

[Table 8]

Second, as we saw in Table 1, more than a few respondents answered "do not remember" to several educational content/practices. If such forgetfulness occurs in a non-random manner due to recall bias, it is possible that our proxies for the hidden curriculum are correlated with unobserved individual preferences or beliefs. We check this possibility by estimating several specifications controlling for the percentage of "do not remember" answers to the 17 educational content/practices, or 17 dummy variables that take unity if the answer is "do not remember" and zero otherwise. Panel B shows estimation results based on the dummy variables' specification. Although the statistical significance of some estimates disappears, the magnitude is almost unchanged. Thus, controlling for these variables does not affect our main findings.

We conduct further checks for the possibility of recall bias. In Table A3 in Appendix III, we run regressions where dependent variables are "do not remember" dummies, and explanatory variables are eight social preferences and

other controls (see Appendix III). If answering “do not remember” is associated with recall bias, we may observe that people with some kind of social preferences are more or less likely to answer “do not remember” to a specific educational content/practice. The estimation results, however, mostly show no evidence of the linkage between current preferences and “do not remember” answers. Even for the exceptions, no convincing evidence exists pointing to recall bias as a convincing explanation of our main findings in Table 7. Thus, it is unlikely that people intentionally forgot the educational content/practices they received, or that people strongly affected by an educational content/practice are more likely to remember that content/practice.

Third, we check the sensitivity of our results to the measurement of the hidden curriculum. Panel C shows the results using group-averages of dummy variables on the 17 educational contents/practices. We divide the 17 educational content/practice dummies into several groups according to their correlation coefficients and calculate the average by group (see Appendix IV). Because the standard deviation of factor scores used in Table 7 is unity, the group-averages are also standardized so that their standard deviation becomes unity for ease of comparison. As can be seen from the results, the magnitude of coefficient estimates is remarkably stable. In addition, as shown in Appendix IV, employing polychoric factor analysis with the principle factor (PF) method instead of the PCF method used in Table 7 does not affect the results. Therefore, our findings

are not sensitive to the measurement of "hidden curriculum" variables.

Fourth, to eliminate any influence of unobserved heterogeneity among municipalities within prefectures, we control city/county dummies (at the age of 12). The results in Panel D show that coefficients on "anti-competition" shrink in size and in statistical significance. This might be due to a lack of variation after controlling city/county fixed effects because the city/county dummies may "over-control" for the variation in "anti-competition" within prefecture. However, the coefficient estimates for "participation & cooperation" are either almost unchanged or increase in magnitude, and contrasts still exist between "anti-competition" and "participation & cooperation." Therefore, we conclude that unobserved heterogeneity within prefecture is less likely to influence our results.

Fifth, we check for potential bias due to endogenous school choice. As already discussed in Section 4.2, parents are unlikely to consider the school curriculum when choosing a public elementary school. However, there may be another possibility wherein this is not the case. For example, after observing the school curriculum via the schooling of a first-born child, parents who consider this curriculum as unfavorable may move to a school in which a more preferred education is provided. In this case, our estimates are subject to having overestimated magnitudes. To check this possibility, we estimate the basic specification (as in Table 7) using the sub-sample of first-born people, a sample

size of 2,005. Given that education-related migration would occur after parental observation of the education that the first-born child received, the content/practices for children born later would be endogenous outcomes. Therefore, excluding the sub-sample of second- or later-born people may attenuate the coefficient estimates in size. The estimation results are reported in Panel E, showing that our estimates are mostly unchanged or rather increase in their magnitude. The statistical significance of some estimates diminishes, but this is mostly due to the decrease in the sample size. Thus, there is no evidence of bias due to endogenous school choice. Logical reasoning also implies that a self-sorting bias is unlikely. Assuming that our results are affected by endogenous school choice, this would mean parents must know exactly the influences of the hidden curriculum beforehand: *positive* effects of participatory/cooperative education on pro-social preferences and *negative* effects of anti-competitive education. However, it is not convincing to assume that people know exactly that seemingly similar educational practices, i.e., participatory/cooperative and anti-competitive practices, have opposite influences.

Finally, we would like to mention the possibility of omitted variable bias due to unobserved teacher characteristics. One might doubt that unobserved teacher characteristics affect the selection of educational content/practices and that our estimates capture the influence of such teachers' personal qualities rather than the hidden curriculum. Fundamentally, we do not rule out the possibility of

such influences through teachers because the hidden curriculum, as explained in Section 2, is considered to be based on preferences, beliefs, and/or norms of teachers, a school, or a community.

At the same time, however, we believe that, in our context, it is unlikely that our estimates confound the influence of unobserved teacher characteristics for the following reasons. First, pupils do not have the same teacher for all years of primary education, and therefore, the influence of a particularly influential teacher would be "smoothed out" by teachers with different levels of influence in other years. In addition, an influential teacher would not have the same level of influence on all pupils in a class or year (i.e., what some people find engaging would not be the same for everyone else). Moreover, our educational content/practices used in the analysis (as listed in Table 1) cannot be determined at the class (teacher) level but at the school level. Given also that teachers (and pupils) cannot choose the schools in which they work (and in which to enroll), educational content/practices at schools are expected to be independent of teachers' personal characteristics. In fact, Table 5 suggests that our proxies for the hidden curriculum vary by prefecture: within-prefecture variations are much smaller than between-prefecture variations. This is mainly due to the educational administration system in Japan, implying that actual educational content/practices are determined at some community level. Furthermore, our estimations in Tables 7 and 8 include several controls that capture the quality of a teacher or a school

(school district), such as class size, dummies for experience with classroom chaos, teachers' active intervention with bullying, and the number of high schools that can be chosen in a school district. We also control for current individual income level, which might partially capture the quality of education. Thus, our estimates are unlikely to suffer from unobserved teacher characteristics.

5.3. Effect of Education on Economy-Related Preferences

So far, we investigated the impact of the hidden curriculum on the formation of social preferences. The results indicate that participatory and cooperative education nurtures pupils' social skills while anti-competitive education has the reverse effect.

In this subsection, we further investigate whether the hidden curriculum affects economy-related preferences.

Columns 1 to 5 of Table 9 report the results for preferences for government redistributive policy, and columns 6 to 8 report those for preferences for market institutions (see Tables A1 and 6 for the definitions of dependent variables and their summary statistic). The table shows that the hidden curriculum also influences the formation of economy-related preferences. Here again, we see a contrast between "participation & cooperation" and "anti-competition." When "participation & cooperation" has a statistically significant positive coefficient, "anti-competition" has a negative coefficient, and when "anti-competition" has a

significant negative coefficient, “participation & cooperation” has a positive coefficient, except for the result in column 1.

The results indicate that those who experienced participatory/cooperative learning (“participation & cooperation”) are more likely to approve of redistributive policies: they endorse government policies to impose heavier taxes on big companies and the rich (columns 3 and 4). In contrast, those who experienced anti-competitive education (“anti-competition”) are more likely to oppose government redistribution policies (column 1), social security (column 5), and the market economy (column 7). While the negative effect of “anti-competition” on the belief in the market economy (column 7) is plausible, the negative effect on redistributive policies (column 1) and social security (column 5) may be contrary to intuition because an anti-competitive view seems to be on the opposite side of inequality, which may be a result of market competition. However, in light of our results in Section 5.1, which indicate that anti-competitive education nurtures an asocial outlook, the results here can be interpretable. In this sense, the results in Table 9 are consistent with the results for social preferences given in Table 7.

[Table 9]

6. Conclusion

This paper examines the role of elementary school education in the formation of

social preferences. In the analysis, we extract proxy factors comprising the so-called “hidden curriculum” and investigate their impact on the formation of social preferences. Our main findings are summarized as follows.

First, educational content/practices at public elementary school show great regional differences despite a national educational policy and curriculum. Although widely believed that public elementary schools in Japan provide undifferentiated education, schools in different areas in fact do employ different educational content/practices. Second, the hidden curriculum exerts a significant impact on pupils’ subsequent social preferences. In particular, education valuing student participation and cooperation is associated with positive social preferences: those who experienced participatory/cooperative learning practices are more likely to be altruistic, cooperative with others, reciprocal, and proud of their nationality. On the other hand, educational practices emphasizing anti-competition are associated with negative social preferences: those educated with anti-competitive practices are more likely to be non-altruistic, uncooperative with others, vengeful, and unpatriotic.

On the whole, our results indicate that elementary school education plays an important role in the preference formation. Thus, in line with Algan et al. (2013) and Cantoni et al. (2014), this study provides evidence of horizontal/oblique socialization mechanisms through elementary education. Furthermore, our results indicate prolonged influences of elementary schooling on

subsequent preference formation, implying that education shapes the future of society through preference formation, not just through human capital formation.

At the same time, however, this study is silent on the role of nationwide educational content/practices in Japan. To better understand the role of education in cultural transmission, further studies should be conducted. One direction would be to explore the causality between cross-national heterogeneity in educational content/practices and cultural diversity using a cross-national dataset with rich information on the school curriculum.

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Tables

Table 1: Informal Educational Content and Practices

Content/Practices	Statement in the questionnaire	Yes	Do not remember
1) Reading before class	There was time for reading before class.	0.272	0.189
2) Statue of hard work	There was a statue of Kinjiro Ninomiya reading a book while walking and carrying firewood on his back.	0.382	0.082
3) School assembly on atomic bomb day	August 6 or 9 during summer vacation was a school day.[a)]	0.245	0.427
4) Gender-segregated class numbers	Student class numbers (attendance numbers) were gender segregated.[b)]	0.619	0.165
5) Teachers' strike	Sometimes, there was no classroom lesson due to a teachers' strike.	0.118	0.149
6) No display of national flag	There was no display of the national flag at some entrance/graduation ceremonies.	0.065	0.252
7) Kids' bank	The school had a kids' bank (*kodomo ginko*).[c)]	0.108	0.113
8) Emergency drill on September 1	The school conducted an emergency drill on September 1.[d)]	0.304	0.468
9) Group learning	There was a task in which students worked together as a group.	0.754	0.126
10) Antidiscrimination education	The school conducted antidiscrimination education (*dowa kyoiku*).[e)]	0.339	0.243
11) No singing of national anthem	There was no singing of the national anthem at some entrance/graduation ceremonies.	0.089	0.165
12) Kolkhoz and Sovkhoz	We studied Kolkhoz and Sovkhoz in a class.[f)]	0.265	0.250
13) School trip to Hiroshima or Nagasaki	We visited Hiroshima or Nagasaki on a school trip.	0.381	0.051
14) Scale evaluation	Educational achievement was evaluated on a several-point scale, e.g., on a scale of one to five.	0.715	0.059
15) Target-based evaluation	There were specific targets for achievement in each subject, and grades were evaluated on the basis of "achieved" or "not." In addition to academic achievement, pupils' behaviors such as compassion toward others and cooperation with others are also included in the list of evaluation items.	0.437	0.198
16) No footraces	There were no footraces at school sports meets.	0.060	0.041
17) No finishing order	There were footraces at school sports meets, but teachers did not rank the finishing order.	0.020	0.054

Notes: The order of educational content/practices is the same as in the questionnaire. a) August 6 and 9 are dates marking the dropping of atomic bombs on Hiroshima and Nagasaki. b) Class (attendance) numbers are student ID numbers in a class, and when teachers call the roll of pupils, the order in which pupils' name is called is based on the number. c) Kids' bank (*kodomo ginko*) is a student-centric bank in which bankers come to school regularly and students can save/withdraw money to/from their accounts. It was established by the Finance Ministry and Education Ministry directly after the war to encourage students to learn the fundamental structure of the banking system. d) September 1 is the day on which the Great Kanto Earthquake occurred in 1923. e) Antidiscrimination education (*dowa kyoiku*) provides opportunities for students

to study discrimination against outcasts that dates back to the Edo era or before. f) Kolkhoz and Sovkhoz are collective farms in the Soviet era.

Table 2: Sample Characteristics

A. Our survey (2012)	Unmarried	Graduates/ Post graduates
Total (age 20 or older)	37.2%	47.5%
Ages 20 to 24	94.5%	39.8%
Ages 25 to 34	68.6%	55.3%
Ages 35 to 44	37.4%	45.5%
Ages 45 to 54	20.1%	45.6%
Ages 55 to 64	9.3%	45.9%
Age 65 or older	4.0%	37.7%
B. Labor Force Survey (2012)	**Unmarried**	**Graduates/ Post graduates**
Total (age 15 or older)	25.8%	20.9%
Ages 15 to 24	96.5%	21.8%
Ages 25 to 34	52.0%	34.4%
Ages 35 to 44	22.8%	26.7%
Ages 45 to 54	13.7%	25.8%
Ages 55 to 64	7.9%	19.3%
Age 65 or older	3.3%	9.0%

Table 3: Result of Polychoric Factor Analysis

	Factor 1: Leftist political thought	Factor 2: Anti-competition	Factor 3: Participation & cooperation	Factor 4: Hard work & effort	Factor 5: Human rights & peace
6) No display of national flag	0.921	0.146	0.052	0.046	0.105
11) No singing of national anthem	0.898	0.107	−0.040	0.009	0.083
5) Teachers' strike	0.546	0.127	0.224	0.333	−0.022
17) No finishing order	0.317	0.848	0.074	0.103	0.110
16) No footraces	0.065	0.832	−0.027	0.006	0.071
9) Group learning	0.033	−0.191	0.745	0.134	0.107
1) Reading before class	−0.024	0.225	0.689	−0.124	0.060
8) Emergency drill on September 1	0.095	−0.010	0.628	0.066	−0.154
15) Target-based evaluation	0.040	0.283	0.545	−0.067	−0.010
12) Kolkhoz and Sovkhoz	0.202	−0.027	−0.126	0.701	−0.052
7) Kids' bank	0.009	0.333	0.156	0.643	0.063
14) Scale evaluation	0.087	−0.093	−0.021	0.594	−0.060
2) Statue of hard work	−0.263	0.182	0.089	0.505	0.267
10) Antidiscrimination education	0.184	0.055	0.021	0.022	0.777
13) School trip to Hiroshima or Nagasaki	0.031	0.135	−0.040	−0.056	0.754
3) School assembly on atomic bomb day	0.238	0.108	0.221	0.269	0.513
4) Gender-segregated class number	0.157	−0.391	0.240	0.399	0.321

Note: Reported figures are rotated factor loadings estimated by polychoric factor analysis using the PCF method with an orthogonal Varimax rotation. Shaded cells indicate a factor loading larger than 0.5.

Table 4: Factor Scores by Age Group

Age group:	20–29 (N = 918)	30–39 (N = 924)	40–49 (N = 908)	50–59 (N = 871)
F1: Leftist political thought	−0.102	0.092	0.075	0.033
F2: Anti-competition	−0.425	−0.870	−0.933	−0.810
F3: Participation & cooperation	2.042	1.452	1.369	1.280
F4: Hard work & effort	0.761	1.176	1.555	1.957
F5: Human rights & peace	0.945	1.111	0.978	0.800

Table 5: Checks on Heterogeneity of the Hidden Curriculum between/within Prefectures

		(1)	(2)	(3)	(4)
		Between groups (prefectures at the age of 12)	Between subgroups (stayers/movers) within groups (prefectures at the age of 12)	Within subgroups (stayers/movers)	Total
	DoF	46	47	3,589	3,682
Factor 1:	MS	0.376***	0.046	0.062	0.069
Leftist political thought	*F*-stat.	6.05	0.75		
Factor 2:	MS	0.143***	0.058	0.054	0.055
Anti-competition	*F*-stat.	2.66	1.08		
Factor 3:	MS	0.647***	0.193	0.152	0.160
Participation & cooperation	*F*-stat.	4.24	1.27		
Factor 4:	MS	0.296***	0.120	0.138	0.143
Hard work & effort	*F*-stat.	2.13	0.87		
Factor 5:	MS	4.288***	0.116	0.116	0.197
Human rights & peace	*F*-stat.	36.89	0.99		

Note: "Group" is defined here as prefecture at the age of 12, and "subgroup" is defined on the basis of respondents' current prefecture: 0 = current prefecture differs from the prefecture at the age of 12, 1 = otherwise. "DoF" stands for degree of freedom, "MS" stands for mean square, and "*F*-stat." is *F* statistic. *F* statistic in column 1 tests the null that the mean squares in columns 1 and 3 are equal, and that in column 2 tests the null that the mean squares in columns 2 and 3 are equal.

Table 6: Summary of Statistics on Empirical Variables

Variable	NOBs	Mean	Std. Dev.	Min.	Max.
Altruism	3,621	3.581	0.768	1	5
Cooperation: outcome	3,621	3.421	0.728	1	5
Cooperation: satisfaction	3,621	3.414	0.805	1	5
Trust	3,621	2.952	0.868	1	5
Competition	3,621	2.922	0.87	1	5
Positive reciprocity	3,621	3.745	0.592	1	5
Negative reciprocity	3,621	2.723	0.774	1	5
National pride	3,621	3.69	0.883	1	5
Income redistribution: poor	3,621	3.184	0.861	1	5
Income redistribution: inequality	3,621	3.325	0.879	1	5
Government tax: companies	3,621	3.417	0.886	1	5
Government tax: wealthy individuals	3,621	3.823	0.931	1	5
Social security	3,621	3.732	0.843	1	5
Deregulation	3,621	3.370	0.782	1	5
Market economy	3,621	3.134	0.756	1	5
Labor union	3,621	3.350	0.883	1	5
F1: Leftist political thought	3,621	0.024	1	−1.725	4.589
F2: Anti-competition	3,621	−0.759	1	−2.797	4.584
F3: Participation & cooperation	3,621	1.54	1	−0.641	4.068
F4: Hard work & effort	3,621	1.354	1	−0.946	4.442
F5: Human rights & peace	3,621	0.961	1	−1.04	3.581
Age [a)]	3,621	39.534	10.881	20	59
Schooling years [b)]	3,621	14.37	2.123	9	21
Female dummy	3,621	0.501	0.5	0	1
Marital status dummies					
Divorced	3,621	0.042			
Bereaved	3,621	0.004			
Unmarried	3,621	0.371			

Income (million yen) [b)]	3,419	273.062	293.118	0	1500
Household size [b)]	3,389	2.867	1.15	1	5
Father's schooling years [b)]	3,089	12.387	2.703	9	21
Mother's schooling years [b)]	3,107	11.799	2.032	9	21
# of books at home					
50 to 99 books	3,621	0.122			
10 to 49 books	3,621	0.407			
1 to 9 books	3,621	0.152			
No books	3,621	0.019			
Do not remember	3,621	0.138			
Living together with grandparents					
Less than a year	3,621	0.027			
Less than 5 years	3,621	0.066			
Less than 10 years	3,621	0.058			
More than 10 years	3,621	0.284			
# of elder siblings	3,621	0.601	0.795	0	6
# of younger siblings	3,621	0.742	0.769	0	7
Class size	3,621	36.043	8.094	1	80
# of high schools					
2 to 4 schools	3,621	0.238			
5 to 9 schools	3,621	0.267			
More than 10 schools	3,621	0.146			
Do not remember	3,621	0.225			
Class size	3,621	36.043	8.094	1	80
Classroom chaos	3,621	0.257			
Teachers' active intervention	3,621	0.263			
Percentage of "do not remember" to the 17 educational questions	3,621	0.174	0.167	0	1

Note: a) "Age" is controlled as five-year age group dummies. b) All variables are controlled as dummy variables. In case of missing values, a dummy for missing values is controlled.

Table 7: Impacts of Hidden Curriculum on Social Preferences

Dependent variable:	(1) Altruism	(2) Cooperation: outcome	(3) Cooperation: satisfaction	(4) Competition
F1: Leftist political thought	−0.008	−0.017	−0.014	0.003
	(0.016)	(0.019)	(0.020)	(0.021)
F2: Anti-competition	−0.032*	−0.031*	−0.023	−0.003
	(0.019)	(0.018)	(0.020)	(0.021)
F3: Participation & cooperation	0.086***	0.042**	0.061***	0.023
	(0.020)	(0.020)	(0.021)	(0.022)
F4: Hard work & effort	0.015	−0.019	−0.034*	−0.014
	(0.020)	(0.017)	(0.020)	(0.020)
F5: Human rights & peace	−0.003	0.015	0.034	0.047*
	(0.020)	(0.022)	(0.024)	(0.025)
Observations	3,621	3,621	3,621	3,621
R-squared	0.155	0.156	0.160	0.152

Table 7 (continued)

Dependent variable:	(5) Trust	(6) Positive reciprocity	(7) Negative reciprocity	(8) National pride
F1: Leftist political thought	−0.005	0.001	−0.028	−0.015
	(0.022)	(0.017)	(0.023)	(0.024)
F2: Anti-competition	−0.001	−0.048***	0.034*	−0.049**
	(0.021)	(0.016)	(0.020)	(0.024)
F3: Participation & cooperation	−0.005	0.041**	0.014	0.067**
	(0.027)	(0.019)	(0.019)	(0.026)
F4: Hard work & effort	0.037	0.009	0.022	0.012
	(0.023)	(0.016)	(0.019)	(0.024)
F5: Human rights & peace	0.015	0.016	−0.012	0.026
	(0.023)	(0.016)	(0.025)	(0.023)
Observations	3,621	3,621	3,621	3,621
R-squared	0.158	0.199	0.152	0.164

Note: "Hidden curriculum" variables are standardized to have a standard deviation of unity for ease of interpretation. All estimations are implemented by OLS with other controls such as five-year birth cohort dummies, education dummies, female dummy, interactions between birth cohort and education dummies, marital status dummies, income category dummies, household size, parents' education dummies, number of books at home at school age, dummies for living with grandparents at the age of 15, number of siblings at the age of 15, class size at elementary school, dummies for experience with classroom chaos and teachers' active intervention with bullying, number of high schools that can be chosen in a school district, and prefecture dummies (current and at the age of 12). In addition, we adjust the sampling weight to make our observations proportional to the overall Japanese population distribution. Numbers in parentheses are Huber-White robust standard errors clustered at 10-year age cohort, gender, and prefecture level.

Table 8: Robustness Checks on Impacts of Hidden Curriculum

Dependent variable:	(1) Altruism	(2) Cooperation: outcome	(3) Cooperation: satisfaction	(4) Positive reciprocity	(5) Negative reciprocity
A) Eliminating unobserved heterogeneity among versions of the formal curriculum guideline					
F2: Anti-competition	−0.032*	−0.032*	−0.023	−0.049***	0.033*
	(0.018)	(0.018)	(0.020)	(0.016)	(0.019)
F3: Participation & cooperation	0.086***	0.041**	0.060***	0.041**	0.015
	(0.020)	(0.020)	(0.021)	(0.019)	(0.019)
B) Partialling out the possible effect of recall bias					
F2: Anti-competition	−0.026	−0.040**	−0.031	−0.042**	0.033
	(0.020)	(0.018)	(0.022)	(0.017)	(0.021)
F3: Participation & cooperation	0.086***	0.032	0.060**	0.056**	0.001
	(0.024)	(0.021)	(0.026)	(0.022)	(0.025)
C) Employing alternative "hidden curriculum" (group-averages of educational content/practice dummies)					
G2: Anti-competition	−0.025	−0.042***	−0.016	−0.017	0.040**
	(0.018)	(0.015)	(0.019)	(0.015)	(0.017)
G3: Participation & cooperation	0.092***	0.049**	0.062***	0.053***	0.010
	(0.020)	(0.019)	(0.022)	(0.018)	(0.019)
D) Controlling municipality fixed effects					
F2: Anti-competition	−0.030	−0.016	−0.030	−0.043**	0.027
	(0.020)	(0.019)	(0.022)	(0.017)	(0.020)
F3: Participation & cooperation	0.097***	0.067***	0.091***	0.055***	−0.009
	(0.024)	(0.018)	(0.022)	(0.018)	(0.022)
E) Checking bias due to endogenous school choice using the sample of first-born people (NOBs = 2,005)					
F2: Anti-competition	−0.040*	−0.025	−0.033	−0.048**	0.026
	(0.024)	(0.025)	(0.028)	(0.022)	(0.025)
F3: Participation & cooperation	0.108***	0.071***	0.062**	0.081***	−0.004
	(0.027)	(0.026)	(0.028)	(0.025)	(0.026)

Note: See the note in Table 7. Taking the results in Table 7 as the base specification, we include additional controls in the estimations reported in Panels A through E. In Panel A, we include dummies for versions of the curriculum guideline and interactions with birth-cohort dummies. In Panel B, we include "do not remember" dummies for the 17 questions regarding educational content/practices. In Panel C, we employ alternative variables for the hidden curriculum (for the definitions of the variables, see Appendix IV). In Panel D, we include municipality (city/county) dummies (at the age of 12). In Panel E, we use the sub-sample of first-born people.

Table 9: Impacts of Hidden Curriculum on Preferences for Government Policies and Market Institutions

Dependent variable:	(1) Taking care of the poor	(2) Reducing income inequality	(3) Heavy taxes on big companies	(4) Heavy taxes on the rich
Leftist political thought	−0.024	−0.019	−0.012	0.009
	(0.021)	(0.025)	(0.027)	(0.021)
Anti-competition	−0.045**	−0.008	−0.031	−0.012
	(0.022)	(0.021)	(0.023)	(0.022)
Participation & cooperation	−0.004	0.023	0.057**	0.038*
	(0.021)	(0.022)	(0.026)	(0.022)
Hard work & effort	0.039*	−0.030	−0.014	−0.021
	(0.021)	(0.022)	(0.023)	(0.023)
Human rights & peace	−0.017	0.013	0.015	0.067***
	(0.024)	(0.031)	(0.027)	(0.025)
Observations	3,621	3,621	3,621	3,621
Adjusted *R*-squared	0.164	0.173	0.132	0.150

Table 9 (continued)

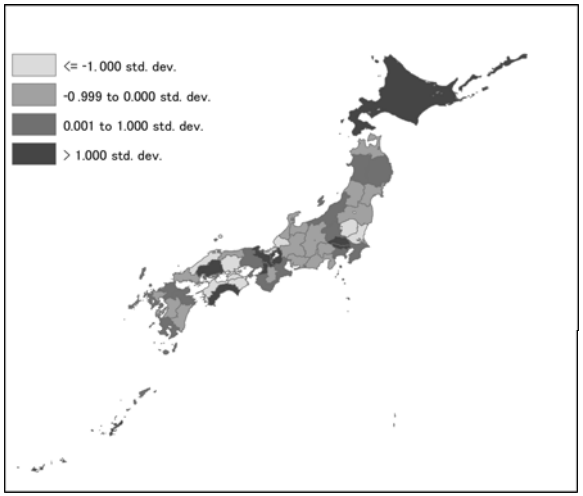
	Redistributive policy:	(6)	(7)	(8)
Dependent variable:	(5) Social security	Deregulation	Market economy	Labor unions
Leftist political thought	0.012	0.005	−0.017	0.035
	(0.024)	(0.024)	(0.023)	(0.023)
Anti-competition	−0.072	0.002	−0.047	−0.027
	(0.020)***	(0.021)	(0.019)**	(0.022)
Participation & cooperation	0.020	0.019	0.006	0.000
	(0.022)	(0.019)	(0.020)	(0.025)
Hard work & effort	−0.005	0.014	−0.021	0.016
	(0.023)	(0.020)	(0.019)	(0.022)
Human rights & peace	−0.008	0.010	0.028	0.044*
	(0.026)	(0.025)	(0.023)	(0.024)
Observations	3,621	3,621	3,621	3,621
Adjusted *R*-squared	0.152	0.152	0.146	0.129

Note: See the note in Table 7. The control variables are the same as in Panel D of Table 8.

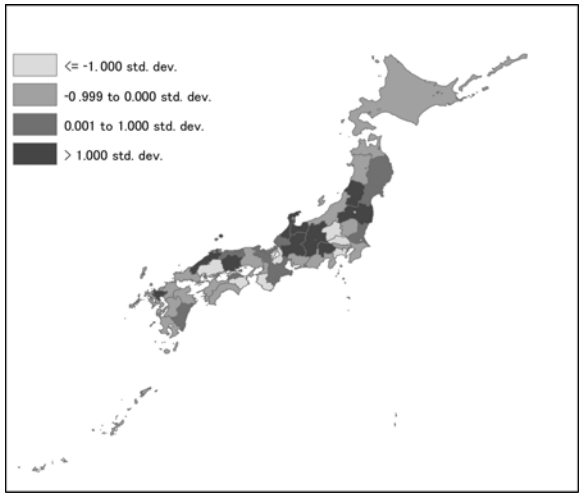
Figures

Figure 1: Factor Scores by Prefecture

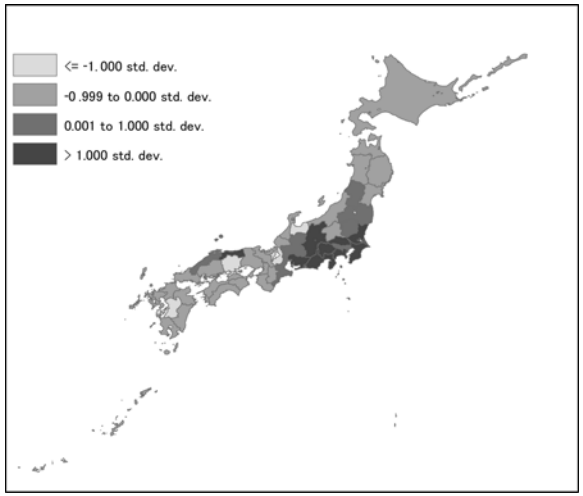
A) Leftist political thought



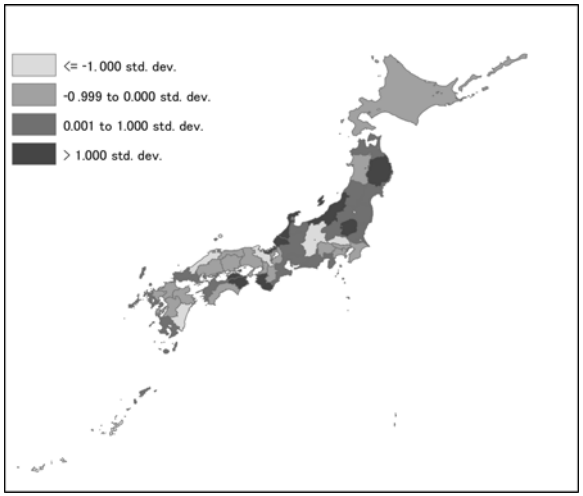
B) Anti-competition



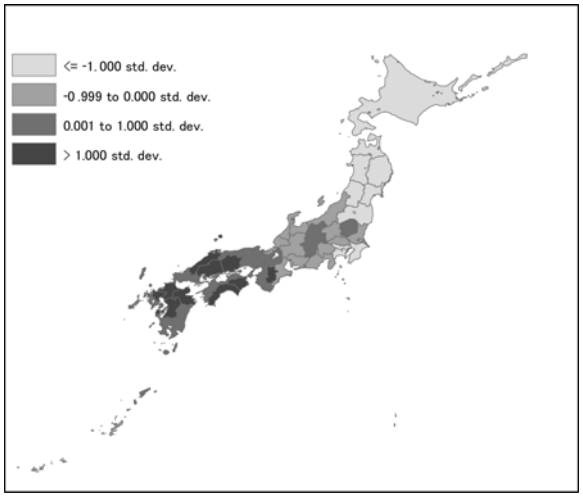
C) Participation & cooperation



D) Hard work & effort



E) Human rights & peace



Appendix I: Empirical Variables

The definitions of dependent variables are in Tables A1.

[Table A1]

Appendix II: Achievement Gap among Elementary Students between Schools

Table A2 reports the results of the analysis of variance (ANOVA) for checking how large the between-school achievement gap during elementary education is in Japan. The data used in the analysis are test scores in mathematics and science for elementary students (fourth grade) from the Third International Mathematics and Science Study (TIMSS 1995). For comparison, results for the United States, England, and Norway are also reported.

[Table A2]

The table shows that between-school disparities in test scores are surprisingly small in Japan in both mathematics and science, compared with those in the United States and England. The mean square for “between schools” is about 6 times larger than that for “within schools” in the United States, and 3 times larger in England. In contrast, the mean square for “between schools” is smaller than that for “within schools” in Japan. Notice also that the relative size of between-school variation in Japan is smaller than that in Norway, which is considered a country with one of the smallest education gaps.

Appendix III: Checks on Intentional Forgetting of Educational Content/Practices

To address the recall bias issue, we run regressions where "do not remember" dummies are dependent variables and eight social preferences are now explanatory variables, controlling the percentage of "do not remember" answers to the other 16 educational content/practices, five year birth cohort dummies, prefecture dummies (at the age of 12), their interactions, female dummy, and education level dummies.

In Table A3, we report the estimation results for the variables "anti-competition" and "participation & cooperation." The results show no linkages between current stated preferences and "do not remember" answers for educational content/practices, aside from a couple of exceptions. Even for these exceptions, no convincing evidence arises that recall bias can explain our main findings in Table 7. Thus, it is less likely that people intentionally forget the educational content/practices they received, or that people who were more affected by educational content/practices are more likely to remember the content/practices.

[Table A3]

Appendix IV: Alternative Measures for the Hidden Curriculum

In Section 5.2, we use alternative “hidden curriculum” variables to check the robustness of our results. The first alternative measure is, as in Panel C of Table 8, group-averages of dummy variables on the 17 educational contents/practices: we divide the 17 educational content/practice dummies into several groups according to their (Pearson) correlation coefficients, and calculate the average by group. Correlation coefficients between the 17 dummy variables are reported in Table A4. Twelve out of 17 variables are classified into four groups based on whether the coefficient is greater than 0.15: the first group (“leftist political thought”) is educational content/practices (5), (6), and (11); the second (“anti-competition”) is (16) and (17); the third (“participation & cooperation”) is (1), (8), (9), and (15); and the fourth (“human rights & peace”) is (3), (10), and (13). Because five educational contents/practices (2), (4), (7), (12), and (14) are not classified into any group based on this criterion, these dummy variables are directly controlled in the estimation.

[Table A4]

The second alternative measure is the factor scores obtained by polychoric factor analysis with the principal factor (PF) method. In Table 7, we use the factor scores obtained by polychoric factor analysis with the PCF method, and the PF method is an alternative one. The result of polychoric factor analysis based on the PF method is reported in Table A5, indicating that the pattern of factor loadings is very similar to those derived by the PCF method as shown in

Table 3. Although estimation results using the factor scores based on the PF methods are not reported here (available from the authors on request), we also find similar results regarding the influences of the "hidden curriculum" variables as in Table 7, implying again that our main findings are not sensitive to the measurement of "hidden curriculum" variables.

[Table A5]

Summary statistics of these alternative measures are reported in Table A6. For ease of comparison, all variables are standardized to have a standard deviation of unity.

[Table A6]

Tables in Appendix

Table A1: Definitions of Dependent Variables

Variable	Statement in the questionnaire	Answer
Altruism	I feel happy when I do a good deed that I think is beneficial for others (such as picking up trash in a park).	1 (strongly disagree) to 5 (strongly agree)
Cooperation: outcome	Working as a group results in greater achievements than working individually.	
Cooperation: satisfaction	I am more satisfied when I achieve a goal by cooperating with others than only by myself.	
Competition	I enjoy competing with others.	
Trust	In general, you can trust most people.	
Positive reciprocity	Average of answers to the following three questions: (1) If someone does me a favor, I am prepared to return it; (2) I go out of my way to help somebody who has been kind to me before; and (3) I am ready to undergo personal costs to help somebody who helped me before.	
Negative reciprocity	Average of answers to the following three questions: (1) If somebody offends me, I will offend him/her back; (2) If somebody puts me in a difficult position, I will do the same to him/her; and (3) If I suffer a serious wrong, I will take revenge as soon as possible, no matter what the cost.	
National pride	I am proud of being Japanese.	
Redistributive policy:		
Taking care of the poor	It is the government's responsibility to take care of those who cannot take care of themselves financially.	
Reducing income inequality	It is the government's responsibility to reduce the disparity between high-income and low-income individuals.	
Heavy taxes on big companies	Government should impose a heavier tax on big companies.	
Heavy taxes on the rich	Government should impose a heavier tax on high-income individuals.	
Social security	Government should make maximum efforts to protect people against illness, injury, or unemployment by enhancing social security.	
Deregulation	Government should actively promote privatization and deregulation.	
Market economy	Although the economy regulated by market forces widens the income gap between the rich and the poor, it makes people wealthier in general.	
Labor unions	Labor unions are not necessary.	1 (strongly agree) to 5 (strongly disagree)

Note: Regarding the definitions and measurements of positive and negative reciprocity, we follow Dohmen et al. (2009).

Table A2: Disparities in Educational Achievements between/within Schools at Elementary Education

		(1)	(2)	(3)	(4)	(5)	(6)
		Mathematics			Science		
		Between schools	Within schools	Total	Between schools	Within schools	Total
Japan	DoF	141	4,164	4,305	141	4,164	4,305
	MS	49.5	81.2	80.2	33.3	55.2	54.5
	F-stat.	0.61			0.60		
United States	DoF	181	7,114	7,295	181	7,114	7,295
	MS	425.3	68.0	76.8	321.7	51.5	58.2
	F-stat.	6.26***			6.24***		
England	DoF	126	2,999	3,125	126	2,999	3,125
	MS	190.2	63.9	69.0	130.5	53.6	56.7
	F-stat.	2.97***			2.43***		
Norway	DoF	138	2,218	2,256	138	2,218	2,256
	MS	67.2	59.6	60.1	50.4	51.9	51.8
	F-stat.	1.13			0.97		

Note: "DoF" stands for degree of freedom, "MS" stands for mean square, and "*F*-stat." is *F* statistic. *F* statistic tests the null that the mean square for "between schools" and that for "within schools" are equal.

Table A3: Checks on intentional forgetting

Dep. Var.: Dummy for "do not remember" answer	F2: Anti-competition		F3: Participation & cooperation			
	(1) E16: No footraces	(2) E17: No finishing order	(3) E1: Reading before class	(4) E8: Emergency drill	(5) E9: Group learning	(6) E15: Target-based evaluation
Altruism	0.001	−0.005	0.006	−0.001	−0.013	−0.018
	(0.005)	(0.006)	(0.012)	(0.014)	(0.010)	(0.012)
Cooperation: outcome	−0.001	0.001	−0.030**	−0.003	−0.005	0.001
	(0.005)	(0.005)	(0.013)	(0.015)	(0.010)	(0.012)
Cooperation: satisfaction	0.003	0.006	−0.002	−0.007	−0.006	−0.012
	(0.004)	(0.005)	(0.011)	(0.014)	(0.008)	(0.011)
Competition	−0.000	0.000	0.002	0.006	0.004	0.015
	(0.004)	(0.005)	(0.010)	(0.012)	(0.008)	(0.010)
Trust	0.002	−0.004	0.012	−0.002	0.002	0.020**
	(0.004)	(0.005)	(0.009)	(0.012)	(0.007)	(0.010)
Positive reciprocity	−0.002	−0.006	−0.016	0.022	−0.005	−0.012
	(0.006)	(0.008)	(0.015)	(0.019)	(0.012)	(0.014)
Negative reciprocity	0.008	0.011*	−0.015	−0.016	−0.003	−0.002
	(0.006)	(0.006)	(0.011)	(0.014)	(0.009)	(0.011)
National pride	0.000	−0.007	0.005	−0.001	0.001	0.002
	(0.004)	(0.005)	(0.010)	(0.012)	(0.008)	(0.010)
Ratio of "do not remember" answers	0.386***	0.434***	0.772***	1.099***	0.788***	0.822***
	(0.046)	(0.045)	(0.056)	(0.056)	(0.045)	(0.052)
H_0: social preference variables have no effects						
F-statistic and *p*-value	0.41 (0.918)	0.85 (0.557)	1.69 (0.096)	0.37 (0.935)	0.78 (0.619)	1.57 (0.127)
R-squared	0.341	0.330	0.298	0.330	0.320	0.301

Note: All regressions are implemented by OLS with five-year birth cohort dummies, prefecture dummies (at the age of 12), their interactions, female dummy, and education level dummies.

Table A4: Correlation Matrix of Dummy Variables for Educational Content/Practices

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1) Reading before class	1.000																
2) Statue of hard work	0.060	1.000															
3) School assembly on atomic bomb day	0.032	0.082	1.000														
4) Gender-segregated class number	0.017	0.101	0.115	1.000													
5) Teachers' strike	0.039	0.036	0.096	0.059	1.000												
6) No display of national flag	0.035	−0.004	0.091	0.043	0.181	1.000											
7) Kids' bank	0.043	0.143	0.101	0.075	0.080	0.061	1.000										
8) Emergency drill on September 1	0.115	0.036	0.085	0.074	0.060	0.014	0.070	1.000									
9) Group learning	0.198	0.055	0.072	0.121	0.060	−0.002	0.046	0.164	1.000								
10) Antidiscrimination education	0.026	0.106	0.179	0.092	0.016	0.075	0.063	0.026	0.115	1.000							
11) No singing of national anthem	−0.018	−0.044	0.069	0.047	0.165	0.530	0.023	0.032	0.008	0.053	1.000						
12) Kolkhoz and Sovkhoz	−0.097	0.100	0.061	0.117	0.149	0.079	0.126	0.004	0.034	0.049	0.080	1.000					
13) School trip to Hiroshima and Nagasaki	0.038	0.048	0.154	0.034	−0.007	0.023	0.058	0.008	0.040	0.285	−0.010	0.001	1.000				
14) Scale evaluation	−0.052	0.088	0.026	0.097	0.030	0.015	0.075	0.018	0.041	−0.016	−0.009	0.138	0.024	1.000			
15) Target-based evaluation	0.165	0.047	0.024	0.040	0.041	0.057	0.029	0.090	0.157	0.055	0.030	−0.014	0.016	−0.016	1.000		
16) No footraces	0.043	0.017	0.028	−0.036	0.013	0.042	0.051	0.034	−0.009	0.029	0.045	−0.010	0.061	0.001	0.060	1.000	
17) No finishing order	0.041	0.033	0.068	−0.007	0.072	0.150	0.085	0.051	−0.018	0.039	0.139	0.032	0.042	0.004	0.077	0.251	1.000

Note: Reported figures are correlation coefficients. The shaded cells indicate that the correlation is greater than 0.15.

Table A5: Result of Polychoric Factor Analysis (Principal Factor Method)

	F1: LPT	F2: AC	F3: P&C	F4: HW&E	F5: HR&P	F6	F7	F8	F9	F10
6) No display of national flag	0.915	0.139	0.050	0.024	0.058	0.116	0.082	−0.016	0.015	0.027
11) No singing of national anthem	0.875	0.113	−0.027	0.043	0.055	−0.120	−0.083	0.034	−0.023	−0.029
5) Teachers' strike	0.419	0.121	0.178	0.277	−0.014	0.327	−0.011	0.014	0.029	0.001
17) No finishing order	0.299	0.815	0.046	0.071	0.066	0.065	−0.042	0.015	0.050	0.039
16) No footraces	0.070	0.743	−0.019	−0.019	0.048	−0.047	0.051	−0.022	−0.047	−0.049
9) Group learning	0.036	−0.095	0.649	0.141	0.104	−0.037	0.002	0.019	−0.026	0.005
1) Reading before class	0.012	0.178	0.549	−0.141	0.014	0.231	0.031	−0.053	0.076	−0.048
8) Emergency drill on Sep. 1	0.060	0.047	0.428	0.059	−0.092	−0.027	−0.025	0.200	−0.011	0.033
15) Target-based evaluation	0.059	0.219	0.391	−0.034	0.006	−0.068	−0.043	0.018	0.062	0.146
12) Kolkhoz and Sovkhoz	0.154	0.014	−0.045	0.566	0.025	−0.039	0.022	0.014	−0.040	0.011
7) Kids' bank	0.057	0.258	0.143	0.491	0.080	0.124	−0.051	0.008	0.100	−0.010
14) Scale evaluation	0.085	−0.032	0.025	0.392	−0.012	0.001	0.318	0.025	0.024	−0.007
10) Antidiscrimination education	0.198	0.097	0.057	0.056	0.608	−0.065	−0.053	−0.016	0.041	0.024
13) School trip to Hiroshima or Nagasaki	0.067	0.153	−0.002	−0.031	0.513	0.077	0.083	0.000	−0.047	−0.046
3) School assembly on atomic bomb day	0.213	0.148	0.163	0.191	0.370	0.210	0.026	0.175	0.075	0.009
2) Statue of hard work	−0.095	0.117	0.069	0.292	0.184	0.083	0.035	0.034	0.286	0.011
4) Gender-segregated class number	0.128	−0.194	0.188	0.290	0.227	0.027	0.102	0.216	0.060	−0.020

Note: Reported figures are rotated factor loadings estimated by polychoric factor analysis using the principal factor method with an orthogonal Varimax rotation. The shaded cells indicate the factor loading larger than 0.3.

Table A6: Summary Statistics of Alternative "Hidden Curriculum" Variables

Variable	NOBs	Mean	Std. Dev.	Min.	Max.
Average of dummy variables on educational content/practices					
G1: Leftist political thought	3,621	0.658	1.000	0.000	4.614
G2: Anti-competition	3,621	0.251	1.000	0.000	6.861
G3: Participation & cooperation	3,621	1.624	1.000	0.000	3.660
G4: Human rights & peace	3,621	1.014	1.000	0.000	3.138
Factor score (obtained by the polychoric factor analysis using the principle factor method in Table A5)					
F1: Leftist political thought	3,621	0.153	1.000	−0.849	4.563
F2: Anti-competition	3,621	−0.211	1.000	−2.312	7.634
F3: Participation & cooperation	3,621	1.741	1.000	−0.468	3.945
F4: Hard work & effort	3,621	1.357	1.000	−1.192	4.617
F5: Human rights & peace	3,621	1.044	1.000	−0.797	3.435
F6	3,621	−0.595	1.000	−4.914	4.997
F7	3,621	1.035	1.000	−3.738	5.113
F8	3,621	0.756	1.000	−2.800	3.861
F9	3,621	0.304	1.000	−2.436	3.269
F10	3,621	0.002	1.000	−4.556	3.858

Notes: All variables are standardized to have a standard deviation of unity, for ease of comparison. Because variables regarding "Hard work & effort" have low correlation coefficients (Table A4), they are controlled directly without grouping and averaging.