

# Noncognitive Traits and Social Preferences Formulated by Elementary School Uniforms<sup>†</sup>

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This paper estimates the causal effects of childhood experiences of wearing school uniforms at a public elementary school for 6 years on behavioral traits in adulthood. The school uniform experience can be endogenous if preferences and characteristics of the school and parents are involved in the decision of schools to implement school uniforms. To examine the causal effect of school uniforms, we exploit the exogenous variation in the expansion of the retail apparel industry across regions which the Japanese government used as a catalyst in stimulating the economy and the regional variations in prefectural governors' initiatives for education-related policies, both of which are found to affect the adoption of school uniform policies. We first find that the childhood experience affects the formulation and development of an individual's personality traits that are characterized by self-esteem and self-efficacy. Second, it increases reciprocal inclinations, inequity aversion, pro-social tendencies, and preferences for the government's redistribution policies. We discuss the reasons behind the consequences of school uniforms on noncognitive traits and social preferences, with a focus on an individual's perception of similarity with others formulated by the childhood experience as an important determinant that affects the behavioral traits.

**Keywords:** School uniform; personality; reciprocity; redistribution; apparel industry; prefectural governors

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## 1. Introduction

A wide controversy regarding the adoption of school uniforms involves the concerns and expectations of the impact of the school uniform system. Some recent studies have focused the positive effects of school uniforms on students' attitudes (Gursky, 1996), school security, academic outcomes (Thomas, 1994),<sup>5</sup> and for maintaining order and discipline in the classroom (Murry, 1997). In addition, some studies analyze the social and psychological development of children affected by the experience of school uniforms with focus on self-esteem (Wade and Stafford, 2003) and conformity to organizational goals (La Pointe et al., 1993). Based on the previous findings on self-expression and conformity to institutional goals, in this study, we examine two behavioral traits formulated by wearing school uniforms: noncognitive traits and social preferences. We focus on the effects of school uniforms in the childhood. We restrict our sample who attended in a public elementary school in Japan, and those who attended the same school for 6 years. We measure noncognitive traits by Big Five personality, which is now widely used for non-cognitive skills in economics field as well as psychology. As for social preferences, we focus on reciprocal inclinations, pro-social tendencies, inequality aversion, preferences for redistribution, with an assumption that an individual's perception on similarity toward others formulated by wearing the same clothes in the childhood might affect how to respond to others' behavior toward myself and what to prefer between egalitarian and not-egalitarian choices regarding myself and others.

This paper aims to contribute to this body of literature by employing empirical specifications that reveal the direct effect of school uniforms on noncognitive traits and social preferences. If a school's decision to implement school uniforms is affected by school's educational policies and parents' preferences/school selection, which are unobserved and hard to measure, the results of previous studies are not consistent estimators. The characteristics and preferences of both schools and parents can affect an individual's noncognitive traits and social preferences (not through the experience of school uniforms). We seek to solve this problem by exploiting an exogenous variation across regions that determines the implementation of school uniforms but does not directly affect behavioral traits.

In the postwar period, it was urgent to rebuild the economy in Japan. The Japanese government chose the apparel industry as a catalyst to boost the national economy. While textile materials depended heavily on imports, this measure was primarily aimed to save foreign capital and use synthetic fiber as textile materials for the domestic apparel industry. To expand domestic demand, the government considered school uniforms as one of the main products that could promote the retail apparel industry. Therefore, some regional areas in which the retail apparel industry was the main industrial sector could experience regional economic growth of the apparel industry, which accordingly affect the schools' decisions to adopt school uniform policies in the given prefecture. In addition to these regional variations in the apparel industry, we predict that a political factor could also affect the implementation of school uniform policies. Some evidence shows that formal local officials who were subsequently elected as prefectural governors use more of the budget for education (Sunahara, 2011). This suggests that formal local officials might have more initiative to promote educational policies in the given prefecture that accordingly affect the schools' decisions to adopt school uniform policies in the given prefecture. The remainder of this paper is as follows. Section 2 describes the dataset and outcome variables and section 3 explains the empirical strategies. Section 4 presents and discusses the estimation results.

## 2. Data and Outcome Variables

We use our original survey titled "Survey for Lifestyle and Worldviews", which was conducted online for 8 days (February 6–14, 2016) by Nikkei Research, a Japanese market research company. To ensure sufficient variation among

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<sup>5</sup> Brunnsma and Rockquemore (1998) and Wade and Stafford (2003) assert that school uniforms have no direct impact on substance abuse, behavior, attendance, academic achievement, or student perceptions of a gang activity.

respondents' past educational experiences, we employ quota-sampling based on age, gender, and region (age 25–59 years; two genders; 47 prefectures) and obtain 18,235 survey responses.<sup>6</sup> We restrict our sample to those who responded that they had never changed schools. After including the confounding and instrumental variables (IVs), 5,623 males and 6,026 females were included in the sample used for estimations.

The followings explain how we measured our outcome variables.<sup>7</sup> **Noncognitive Skills.** To assess personality traits, we use the Big Five personality traits, which is a unifying framework comprising five basic characteristics: *extroversion*, *agreeableness*, *conscientiousness*, *emotional stability*, and *openness to experiences* (Gosling et al., 2003). **Reciprocal Inclinations.** We used six questions based on Perugini et al. (2003) and categorized them into positive or negative reciprocity. **Inequity Aversion.** Following Sheremeta and Shields (2013), we measured inequity aversion and categorized the responses into *prosocial* (respondents who chose to increase the wealth of others, if the choice does not affect their own wealth), *ahead-averse* (respondents with sufficiently negative utility from receiving more than others), and *behind-averse* (respondents with sufficiently negative utility from receiving less than others). **Individual Preferences for Redistribution.** Calculating the mean value of responses to the six questions regarding the extent to which respondents support the government's redistribution policy.

### 3. Empirical Specifications

To examine the effects of school uniform on the formation of behavioral traits, we estimate the following equation:

$$Y_{ijc} = \beta_0 + \beta_1 SU_{ijc} + \mathbf{X}_{ij} \beta_X + \delta_j + \delta_c + \varepsilon_{ijc} \quad (1)$$

where  $i$  indexes individual,  $j$  denotes municipality (city/ward/county; “*shi/ku/gun*”),  $c$  represents birth cohort,  $Y_i$ , consist of (1) non-cognitive traits measured by the Big Five personality traits, and (2) social preferences such as reciprocal inclinations, inequity aversion, and support for the government's redistribution policies.  $SU_{ijc}$  is an indicator variable that takes unity if respondent  $i$  wore a school uniform at a public elementary school at the age of 6 years (see Figure. 1<sup>8</sup>), and  $X_{ij}$  is a vector of individual/household and regional characteristics. Regarding individual characteristics, we include gender, and educational attainment. As household backgrounds, we control for father and mother's educational attainment, and mother's employment status (when respondents were 3 years old).<sup>9</sup> In addition, to control for the regional variations in industrial sectors, we include the ratio of the manufacturing industry to the gross regional product (RMP).  $\delta_j$  and  $\delta_c$  are the municipality and cohort fixed effects, respectively. Note that the municipality is based on the place of residence the respondent lived at the age of 6 years.

In estimating  $\beta_1$  in Eq. (1), education-oriented schools may adopt school uniform policies to create a school environment under which students can highly concentrate on their studies; parents may self-sort into schools with (or without) school uniforms depending on their preferences. The schools' and parents' preferences and characteristics can affect noncognitive traits and social preferences; experiences with school uniforms are then likely to be biased. To address these identification issues, we employ the IV regression based on the following equation:

$$SU_{ijc} = \alpha_0 + \mathbf{Z}_{jc} \alpha_1 + \delta X_{ijc} \alpha_X + \gamma_j + \gamma_c + \nu_{ijc} \quad (2)$$

<sup>6</sup> 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.

<sup>7</sup> Due to space constraints, we do not include the table that report descriptive stats in this paper. The overall summary stats are not significantly different from other related literature except for the following: unlike the previous literature, (1) the mean value of positive reciprocity is larger than that of negative reciprocity; (2) the mean values of inequity aversion are much higher.

<sup>8</sup> It describes the average percentage of respondents who wore school uniforms compiled every 5 years from 1960 to 1990. We can observe some fluctuations between years in each prefecture and the overall increase since the 1960s.

<sup>9</sup> We employ dummy variables for one's/parents' education and mother's employment to include responses of “don't know/don't want to answer”. Mother's employment consists of 7 categories by the combination of full/part-time, public/private/self-employed.

As candidates for instrumental variables,  $Z_{jc}$ , we exploit two different sources of variations.<sup>10</sup> First, we use the ratio of the value added in the apparel industry to that in the manufacturing industry (“RAM” hereafter) in the prefecture where a respondent lived at age 6. RAM is then calculated by the mean values of five years before entering elementary school.<sup>11</sup> We additionally control for the RAM of neighboring prefectures. We categorize Japan’s 47 prefectures into 10 administrative regions and calculate the average RAM except for one’s own prefecture where a respondent lived when they were 6 years old. We assume that the state of the apparel industry of neighboring prefectures and their mass production of school uniforms would also affect the implementation of school uniform policies. As the second source, we use the career backgrounds of the prefectural governors who held the position one year before the entrance to the elementary school.<sup>12</sup> We hypothesize that formal local officials have different preferences for education-related policies, which in turn affects the adoption and implementation of school uniform policies. Furthermore, formal local government officials could adopt the government’s economic policy to stimulate the apparel industry in their own prefecture, which was tested by interaction terms between RAM and binary indicator of governors who were formal local officials.

## 4. Estimation Results

### 4.1. IV Estimates

Our IVs determine school uniforms but do not directly determine outcome variables. As for the first IV, RAM, not only its own prefecture, but also neighboring prefectures significantly affect an elementary school’s implementation of school uniforms among both females and males. Figure 2 visually describes the IV estimation. The regression-adjusted school uniforms and RAM are summarized for 5 years from 1961 to 1995 by prefecture and cohort. This figure indicates that as RAM increases in both its own prefectures, the ratio of respondents who wore school uniforms also increases. Our second IV is also positively correlated with school uniforms, which suggests formal local government officials are more likely to adopt school uniform policies. However, contrary to our expectation, our interaction term between the first and second IVs was not statistically significant.<sup>13</sup> We should emphasize that the results in the following sections are obtained when the related tests for instruments—F values and under- and over-identification tests—are verified.

### 4.2. Main Results

Our overall results suggest that the childhood experience of wearing a school uniform significantly affects the formulation of noncognitive traits and social preferences in adulthood (Table 1). Our first main result is that the childhood experience of wearing a school uniform lowers *emotional stability* among women, which is characterized by the following traits, self-consciousness, self-esteem, and self-efficacy (John and Srivastava, 1999). This suggests that those who wore school uniforms have lower degree of self-acknowledgement, which is consistent with Wade and Stafford (2003), who found the significant link between clothing and self-perception. Our second results indicate that school uniforms significantly positively affect reciprocal inclinations (negative), prosocial tendencies, and preferences for redistribution among men.

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<sup>10</sup> Note also that the subscript  $j$  in the equation denotes municipality (city/ward/county), but instruments discussed here are the prefecture-level variables. Prefecture and municipality are respectively the first and second level administrative divisions, and, in our dataset, there are about 53 municipalities in a prefecture on average.

<sup>11</sup> We use a rather long-term RAM (five-year-averaged), because we assume that the elementary school’s decision is not necessarily made shortly before students enter to the school (e.g., one year before the entrance).

<sup>12</sup> For the robustness check, we instead use the fraction of years, for which formal local government officials have held the position as governors, between 1947 and the year when the respondent entered primary school. We find no difference in main results.

<sup>13</sup> The main results do not differ without interaction terms.

Figure 1. The Ratio of Apparel to Manufacturing Industry (RAM)

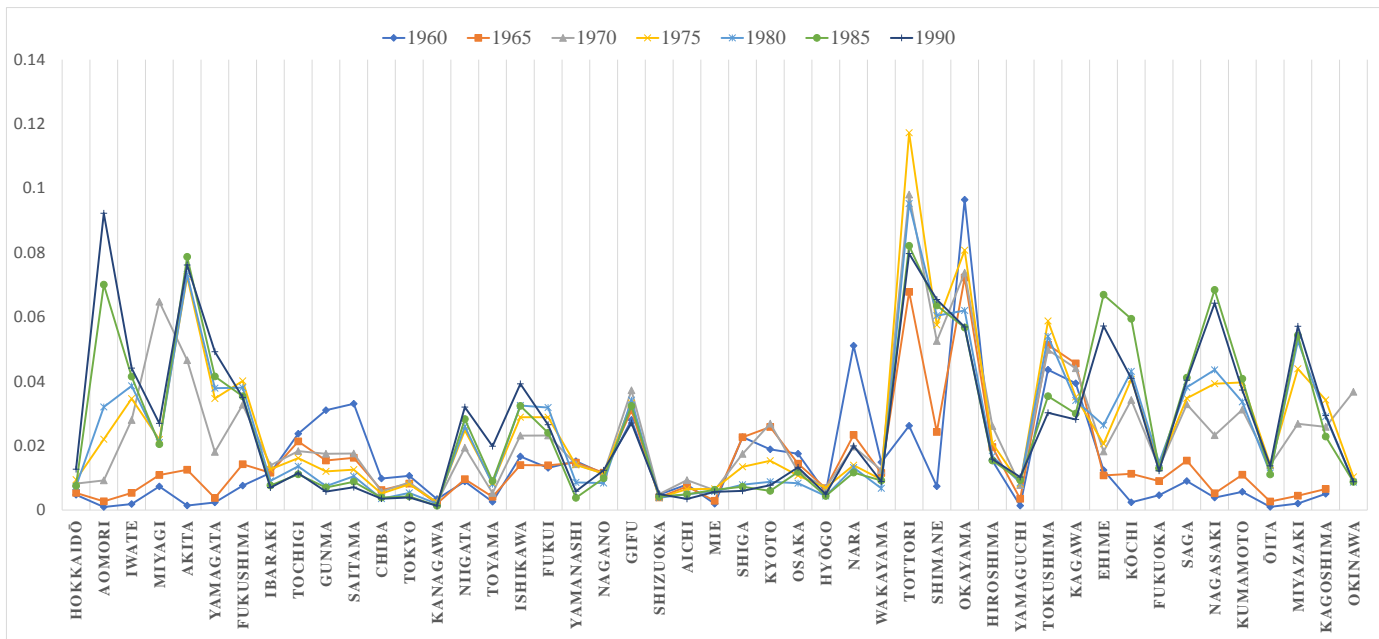


Figure 2. Regression Adjusted RAM and School Uniforms

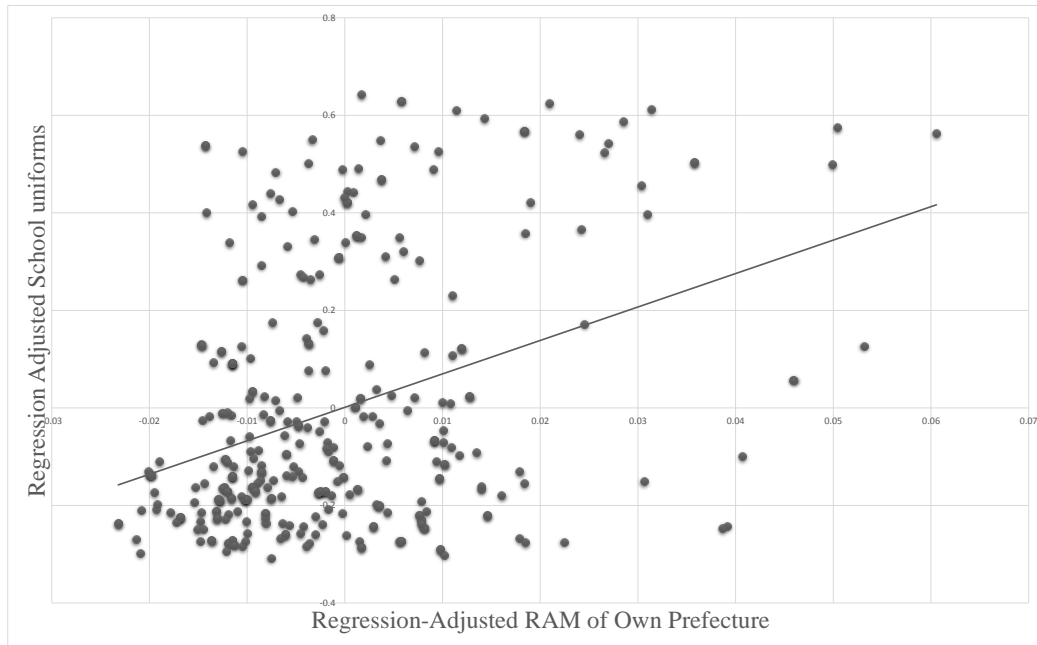


Table 1. Effects of School Uniforms on Noncognitive Skills and Social Preferences

Fixed Effects+Instrumented	Noncognitive Skills (Big Five Personality)						
	Extroversion (1)	Agreeableness (2)	Conscientiousness (3)	Emotional Stability (4)	Openness to Experiences (5)		
Male	-0.4956 (0.521)	-0.1977 (0.395)	-0.1464 (0.439)	0.0110 (0.423)	0.3197 (0.441)		
Female	-0.4782 (0.537)	-0.2860 (0.397)	-0.5686 (0.450)	-0.8396* (0.456)	0.3899 (0.434)		
Fixed Effects+Instrumented	Social Preferences						
	Reciprocal Inclinations (1)	Reciprocity (Positive) (2)	Reciprocity (Negative) (3)	Redistribution Support (4)	Pro-social Tendency (5)	Ahead Aversion (6)	Behind Aversion (7)
Male	0.4539** (0.215)	0.2033 (0.240)	0.7046** (0.332)	0.6583** (0.276)	0.2411* (0.141)	-0.1020 (0.180)	-0.1192 (0.150)
Female	0.0949 (0.191)	-0.0322 (0.216)	0.2220 (0.315)	-0.2144 (0.226)	-0.0250 (0.127)	0.0929 (0.152)	0.1526 (0.108)

Note: Individual characteristics, household backgrounds, and the regional variations in industrial sectors are additionally controlled for. School uniforms are instrumented by mean value of RAM for 5 years before the entrance of (1) own prefecture, (2) neighboring prefectures, (3) governors who were formal local officials (4) interaction terms of (1) and (4). All the specifications control for the cohort and municipality fixed effects. Standard errors in parentheses \*\*\* p<0.01, \*\*

These results are in line with previous studies that focus on negative reciprocity and collective actions (Fehr and Gächter, 2000), reciprocal altruism, redistribution support (Alesina et al., 2001), and the relationship between similarity and redistribution (Ordabayeva and Fernandes, 2017). What are the possible reasons behind the link between school uniforms and behavioral traits? As it is found that school uniforms promote conformity to organizational goals and heighten belonging to institutions (La Pointe et al. 1993), this environment could formulate the perception of similarities toward in-group members. This significantly affects the relationship with and attitude toward others, in particular within the group, among men, while it more affects the perceptions of themselves among women, who are more aware and conscious of fashion and their appearance (Funada and Tada, 1999). These results can be utilized in future school uniform policies in Japan: the importance of interactions between parents and schools and consideration of students' rights of expression can be integrated into further discussions regarding the implementation of school uniforms.

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