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The Early Life Influences of Teachers' Genders on Later Life Charitable Giving: Evidence from the Natural Disasters in Japan

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ABSTRACT

The Early Life Influences of Teachers' Genders on Later Life Charitable Giving: Evidence from the Natural Disasters in Japan*

What determines human beings' decisions to donate money to a charity? Using a nationally representative survey of the Japanese population, we demonstrate that having been taught by a female teacher in their first year of school makes individuals more likely to donate to charities following natural disasters. The findings are robust in controlling for lessons on prosocial behaviors, such as group learning. We tested our results separately for men and women, as well as on prosocial attitude outcomes. Overall, our results suggest potential prosocial implications may arise from teacher-student gender matching.

JEL Classification: D64, I20

Keywords: charitable giving, gender, prosocial, Japan, natural disaster, donation

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I. Introduction

Why do people give to charities? According to economists, one reason behind people's choice do donate to charities is the warm glow that comes from giving; that is, people derive joy or satisfaction by taking part in helping others (Andreoni, 1989, 1990). People may also give to charitable organizations to signal their social status (Glazer & Konrad, 1996; Kuru & Vesterlund, 2010), to conform to social norms (Croson et al., 2009), to achieve social acclaim, (Becker, 1974) or to gain social approval (Hollander, 1990).

In addition to studying why people give to charity, economists have also looked at whether people's demographics affect decisions on giving to charity. For example, one of the leading research questions in this area is whether men and women contribute the same amount to charity. Many studies have found that women give more to charitable organizations than men do (see, for example, Andreoni et al., 2003; Piper & Schnepf, 2008; DellaVigna et al., 2013). Findings from these studies could imply that women are more altruistic (and therefore derive more satisfaction from charitable giving than men do), that women's decisions to give to charity are more sensitive to social contexts than men's (Croson & Gneezy, 2009), or both.

In this study, we hope to contribute to the existing literature on demographic differences in charitable giving by focusing on a relatively unexplored question: Do women pass their prosocial preferences on to the following generations? However, we did not focus on the intergenerational transmission of prosocial behaviors from mothers to their children. Rather, we investigated whether teachers' genders play a vital role in determining their students' charitable giving later in life. Thus, this study's design allows us to bypass the issue of heritability of prosocial traits altogether.

In the aftermath of Japan's 2016 Kunamoto earthquakes, charities were set up to help people in the affected regions. It was our goal to assess whether individuals who were randomly assigned a female homeroom teacher in their early years were (*ceteris paribus*) significantly more likely to donate to these organizations. The results, which were more robust for males than for females, provide some of the first evidence that values and behaviors associated with a teacher's gender are also more likely to affect their students' decisions later in life.

The remainder of this article is organized as follows: Section II reviews the relevant literature; Section III gives background information on the natural disasters in Japan; Section IV discusses the data and our empirical strategy. Results are reported in Section V, and our conclusions appear in Section VI.

I. Background

A. Gender, Prosocial Preferences, and Charitable Giving

In the social and behavioral sciences, there exists an extensive body of literature on gender differences in prosocial preferences (for example, Croson & Buchan, 1999; Andreoni & Vesterlund, 2001; Espinosa & Kovářík, 2015). While the existing (stereotypical) view is that women are broadly more generous than men, research on gender differences has produced results that vary significantly across studies (see Croson & Gneezy, 2009 for a review). One explanation for this variance in empirical findings is that women are generally more malleable or more sensitive to social cues in determining appropriate behaviors compared to men (Croson & Gneezy, 2009; DellaVigna et al., 2013; Espinosa & Kovářík, 2015). In other words, context seems to play an essential part in determining women's propensity to behave more or less altruistically in an experiment.

To give just a few examples, DellaVigna et al. (2013) found that, in door-to-door solicitation for charitable donations, men and women are equally generous. Yet, women become less generous when it is easy to avoid solicitors. What this implies is that women are more likely to be on the precipice of giving, since they are more sensitive to an extra push compared to men. Nevertheless, they may decline to give if given a simple option to do so. Ben-Ner et al. (2004) show that while women generally reciprocate more in a dictator game than men, their decision on how strongly to reciprocate depends much more strongly on the amount received compared to men's choices. Espinosa and Kovářík (2015) found that social framing in economic games tends to reinforce prosocial behavior in women, but not in men.

What these studies seem to suggest is that women are more likely to give more than men to charitable organizations when there is salient framing of others in need. This seems to be consistent with Andreoni et al.'s (2003) study on gender differences in charitable giving in the US, and Piper and Schnepf's (2008) UK study, which found that women tend to give more than men for causes related to animal welfare, children, the elderly, and education (but not for causes related to the environment, religion, and mental health).

While it is well-established that women tend to give more than men to specific charities (and to charity in general), much less is known about the transferability or inheritability of these prosocial preferences across generations.[1] One exceptional study of the intergenerational transmission of charitable giving in the US was carried out by Wilhelm et al. (2008). They found evidence of statistically significant correlations between parents' and adult children's charitable giving. However, the study did not attempt to establish the relative importance of mothers' versus fathers' influences on this type of giving. Additionally, we know even less

about the intergenerational transmission of generosity between adults and nonbiological children (for example, from teachers to their students).

B. Teachers' Genders and Student Outcomes

There is virtually zero evidence in the literature to suggest that teachers' genders play an essential part in determining students' prosocial preferences. Much of the research in this area tends to focus on the importance of teacher-student demographic matching as a predictor of demographic gaps in student performance. Yet, there has been very little exploration of non-academically related outcomes (for example, Bettinger & Long, 2005; Dee, 2005, 2007; Holmlund & Sund, 2008; Cho, 2012; Winters et al., 2013; Lim & Meer, 2017; Sansone, 2017).

Why should teachers' genders matter to student outcomes? One of the driving educational hypotheses is that teacher-student interactions fare better in schools where there are matches between teachers' and students' races, ethnicities, and gender identities. This hypothesis assumes that students are more likely to see demographically similar teachers as role-models. In contrast, teachers from different demographics may hold unintended biases toward students who are demographically dissimilar from them. Nevertheless, empirical results remain somewhat mixed, with some studies finding positive effects of teacher-student demographic matching (for example, Bettinger & Long, 2005), while others found little or no relationship between teachers' demographics and students' academic performance (for example, Sansone, 2017).

Based on these two areas of study—one on gender and prosocial preferences, the other on teachers' genders and student outcomes—a hypothesis is that students' prosocial preferences are determined in part by teachers' prosocial preferences. These tendencies are typically greater

in women than in men. Another hypothesis is that students' prosocial preferences will be reflected in their behaviors when there are strong social cues to be generous (for example, a call for donations to help others in need). Finally, based on the assumption that students are more likely to view demographically similar teachers as role-models, one hypothesis might be that teachers' genders have stronger predictive powers for students' prosocial preferences when their genders are matched. Nevertheless, given that boys are more likely to have lower prosocial preferences than girls, the opposite could also be true — that a teacher's gender predicts prosocial preferences more strongly for boys than it does for girls.

Accordingly (using data collected three months after one of Japan's most recent and devastating earthquakes), our study aims to test these hypotheses regarding early teachers' genders and charitable giving later in life .

III. Background to Japan's natural disasters

In recent times, several large-scale earthquakes (that is, with a magnitude of 6 or more) have hit Japan. Most notable are the Great Hanshin Awaji earthquake (1995), the Great East Japan earthquake (2011), and the Kumamoto earthquake (2016).

For perspective on how devastating these earthquakes were to Japan, 6,308 people died in the Hanshin Awaji earthquake, and approximately 100,000 homes were destroyed. The loss of housing was estimated at over $60 billion USD, and the loss of capital stock was over $100 billion USD (Horwich, 2000; Sawada & Shimizutani, 2007, 2008).

As for the Great East Japan earthquake, there were over 15,200 deaths, while the total damage to property and capital stock was estimated to be around $20,000 USD –30,000 billion

(Sawada, 2011, p. 46). In comparison, the damages from the Kumamoto earthquake were smaller. Nevertheless, 228 people died as a consequence, and approximately 200,000 homes were either destroyed or suffered partial destruction (Cabinet Office, Government of Japan, 2017).

In summary, the recent natural disasters in Japan were so devastating that they led to nationwide appeals for help. Consequently, this led to a massive surge of donations directed to these areas (Yamamura et al, 2017). It is the variation of these donations that is our outcome variable of interest.

IV. Empirical methodology

A. Data

We commissioned the Nikkei Research Company to conduct a nationally representative web survey of people's charitable behavior three months after the Kumamoto earthquake (that is, in July 2016[2]). In total, the Nikkei Research Company managed to recruit 12,176 people to complete the questionnaire.

From this sample, we obtained socio-economic and demographic data, such as respondents' genders, ages, household incomes, job status, marital status, and number of siblings. Most important for the present study was the information gathered on respondents' educational curriculum, such as working and learning collaboratively in primary school. In order to test our hypothesis on the importance of teachers' genders on student outcomes, we conducted a follow-up survey in July 2017. This follow-up survey was explicitly designed to elicit information regarding the genders of respondents' primary school teachers.

In total, we were able to obtain 9,130 responses to the follow-up survey. Of those, 7,107 individuals participated in both the 2016 and 2017 surveys, for a 75% retention rate. There were 3,846 males and 3,261 females (a similar percentage to the results of the 2015 Japan Census). We estimate that the number of observations dropped slightly, as some respondents replied that they "*do not remember*" their teacher's gender. As a result, it is possible that we collected more observations from younger respondents, as they are seemingly more likely to remember the gender of their primary school teachers. Potentially, this could have resulted in a measurement error bias.

However, it should be noted that the response rates received for questions on teachers' genders were very high. Approximately 80% gave a valid response (male or female), a figure which is almost the same across all age groups. This helped alleviate our concerns of a possible measurement error bias. Additionally (according to a 2015 survey on information technology), over 90% of the working-age population in Japan are web-users. This knowledge alleviated some selection bias-related concerns; namely, that web-users may be different from the rest of the population.[3]

How randomized are the assignments of female teachers in Japanese primary schools? Looking at our sample, 65% of students were assigned a female teacher in their first year of primary school, a number which declined monotonically to around 30% by their sixth year of primary education. In part, this reflects the fact that there are more female teachers than male teachers in the early levels of Japan's educational system. One reason for this may be the lesser workload in lower grades compared to higher ones. As Japan's female teachers are often expected to go home after work and do a "second shift" of household work, they tend to avoid teaching higher grades.

Despite a higher proportion of female teachers in the early years of primary school education, the assignment of first grade students to either a female or a male homeroom teacher is still random, as parents are not allowed to choose their children's class based on the teacher's gender. In these early years, homeroom teachers are expected to develop an understanding of students' characteristics, temperaments, and behaviors. However, by the time children reach higher grades, schools will have gathered more information on how better to match individual students with specific teachers, potentially resulting in a selection bias. Nonetheless, it is highly unlikely that such non-random assignment of teachers occurs in the first year of primary school education. Consequently, we can be more confident that the probability of having a female first grade teacher is randomly distributed across students' and parents' characteristics.

The present paper draws on two survey questions. These are: (i) "*Did you donate to the Great Hanshin-Awaji/the Great East Japan/Kumamoto earthquake?*"; and (ii) "*Do you agree that the government should play a critical role in preparing for a natural disaster? 1: Completely disagree −5. Completely agree*". We took both variables as proxies for how much individuals cared about the natural disaster in question.

B. Empirical Strategy

Our first empirical specification tests whether having a female homeroom teacher in primary school predicts students' decision to give to charity following a natural disaster in adulthood:

$$C_i = \alpha + \beta_1 FT_i + \beta_2 SC_i + \beta_3 X_i + \varepsilon_i, \qquad (1)$$

where C_i is a binary variable with a value of 1 if the student donated to a charity to aid sufferers of one of the Japanese earthquakes, and 0 otherwise; FT_i is a set of dummy variables

representing having a female teacher in each of the primary school years; SC_i is a set of dummy variables representing different school curricula that may impact students' tendency to donate to a charity (for example, group learning vs. competitive settings within a class); X_i is a set of students' characteristics, including educational background, parental education, ages when the disasters occurred, household income, number of siblings, and regional dummies; and ε_i is the error term. Our decision to include SC_i as control variables stems from the assumption that female teachers may engage in more pro-social teaching (such as encouraging group work and limiting competition among students) than male teachers. These factors need to be conditioned for in our estimation of the effect of teachers' genders. Given that probit coefficients are not readily interpretable, marginal effects at the means are reported[4]. Japan is divided into 47 prefectures, which form the first jurisdictional level and administrative division. Standard errors clustered by 47 residential prefectures.

In addition to the charity donation regression, we also test in our second specification whether having a female homeroom teacher in primary school predicts individuals' attitudes towards the government's role in preparing for a natural disaster. Here, the dependent variable in Eq. (1) is replaced by a Likert scale of 1 ("completely disagree that the government should play a critical role") to 5 ("completely agree that the government should play a critical role"). Although qualitatively similar results can be obtained with ordered probit/logit models, we then used OLS to estimate the regression equation.

V. Results

Does having female teachers in primary school predict charitable giving in adulthood? To make an initial determination on this question, Figure 1 illustrates the proportion of people donating to charity based on the gender of their primary school teachers in different grades. We found

that the proportion of people donating to charity is noticeably higher among individuals who had female teachers in grades 1 to 4. Figure 2 illustrates average attitudes towards the government's role in preparing for natural disasters according to the gender of respondents' primary school teachers in different grades. These results also corroborate Figure 1's raw data pattern. Here, we can see that individuals who had female teachers in early school grades tend to agree more with the statement that the government should play a critical role in preparing for a natural disaster. Hence, Figures 1 and 2 present raw data evidence that having female teachers in one's early years influences a person's attitudes towards prosociality in future years.

To explore this issue more carefully, Table 1 presents the regression-adjusted results for having female teachers during the primary school years on the probability of giving to a charity following a natural disaster in adulthood. Since this is a marginal probit model, we can directly interpret the coefficients as marginal effects at the mean.

Looking at Column 1, in which the dependent variable takes a value of 1 if the individual donated to any of the three charities and 0 otherwise, we can see that there is a five percentage point difference in the rate of donation between individuals who had female teachers in the first grade, and those who had male teachers. The coefficient is statistically significantly different from zero at the 1% level, thus suggesting that (all other things remaining constant), having a female teacher in first grade strongly predicts charitable giving later in life. This is consistent with our hypothesis that students' prosocial preferences are determined in part by teachers' prosocial preferences, which are higher for women than for men. This first-year correlation coefficient is quantitatively important, as well as statistically significant: in terms of magnitude, it is slightly smaller than the effect of being female, and is roughly the same size as the group learning education coefficient. However, we did not find strong evidence to suggest that having

female teachers in later grades further predicts a propensity to give to a charity in the future. Thus, female teachers' influences on prosocial attitudes in adulthood may be most significant in students' first year, and are likely to be "set in stone" before the student enters his or her second year of school.

For robustness checks, Columns 2-5 of Table 1 split the dependent variable into donations for different charities; that is, Hanshin-Awaji, East Japan, and Kumamoto. Given that the Hanshin-Awaji earthquake occurred in 1995, Column 2 uses only individuals who were old enough to give to a charity in 1995, that is, those who are currently aged 40 or older. A similar sample restriction applies in Column 3 for the Great East Japan earthquake that occurred in 2011, that is, those who are currently aged 25 or older. Column 4 focuses on donations to the Kumamoto earthquake, which occurred at the same point in time as our survey. Finally, Column 5 introduces other socio-economic variables which were available at the time of the Kumamoto earthquake, including income level, marital status dummies, job dummies, and number of children. Looking through the rest of Table 1, we continue to see a donation rate around five percentage points higher for individuals whose first-year teacher was female rather than male. [1]

Table 2 separates the data by respondents' genders. . One justification for this sub-sample regression is that the estimated marginal effect of female teacher may be stronger for male respondents than for female respondents, simply because the average rate of charitable giving is higher for women than for men. In contrast, it may be equally true that the effect of a female teacher is stronger for women than for men (because students may be more likely to view teachers who are similar to they are as role-models). Table 2's estimates appear to be marginally

consistent with the former rather than the latter hypothesis. For example, we found the coefficients on having a female teacher in the first school grade to be positive and statistically significant across all specifications for men, but not for women. Nevertheless, we find evidence that both men and women give approximately five percentage points more to charity if they had a female teacher in their first school grade. This suggests that female teachers' influences in the first year of school may have been distributed equally across male and female students.

Table 3 shifts the focus to individuals' attitudes towards the government's role in preparing for a natural disaster. Using OLS to estimate the attitude regression, Column 1 of Table 3 shows the level of belief that the government should play a more critical role in preparing for a natural disaster. On average, individuals whose first teacher was female report statistically significantly higher levels than individuals whose first teacher was male. The estimated coefficient (0.09 [*S.E.* = 0.04]) is only marginally smaller than the estimated coefficient of the group learning dummy of 0.11 [*S.E.* = 0.02]. Columns 2 and 3 of Table 3 split the data into male and female sub-sample regressions. Here, we continue to find the coefficient of female teachers in the first grade to be positive (albeit marginally) statistically significant at the 10% level. We also find a blip in the pattern of estimates in the female sub-sample regression. In this situation, the coefficient of having a female teacher in the fourth school grade is positive, and statistically significant at 0.09 [*S.E.* = 0.03].

For robustness checks, Table 4 controls for individuals' previous experiences of donation. This allows for the possibility that people who had previously donated may be more likely to regard future natural disasters as more important than those who had not previously donated to a cause. Yamamura et al, 2015; and Hanaoka et al., 2018, provide evidence on how a natural disaster can change a person's perception of the future. Looking across the different columns'

specifications in Table 4 yielded interesting findings. We saw that previous donations to other charities positively and statistically significantly correlated with people's attitudes towards the government's role in preparing for a natural disaster. Nevertheless, we can see that the inclusion of these additional control variables did little to alter the sign and the statistical significance of the coefficient on having female teaching in the first school year.

Finally, Table 5 reports the results for male and female sub-samples. Here, we continue to find the female teacher in the first school grade coefficient to be positive, sizeable, and precisely estimated in the male sub-sample regression. However, for female respondents in the sample, there is little statistical evidence to suggest that the same meaningful relationship exists between the teacher's gender and individuals' attitudes towards the government's role in preparing for a natural disaster . This is consistent with the hypothesis that the effect of a teacher's gender on the student's prosocial attitudes is likely to be stronger for males than for females.

VI. Conclusions

This paper investigates the influences of teachers' genders in students' early lives on their prosocial behavior and attitudes in adulthood. Using the most recent major natural disasters in Japan as proxies for prosocial giving, we find evidence that the random assignment of female teachers in the first year of school in Japan predicts the student's future charitable donations. We also found evidence of the importance he or she places in adulthood on the government's role in preparing for a natural disaster. Students who had a female teacher in their first year of school are five percentage points more likely to give to one of the charities created for one of the recent natural disasters in Japan. The estimated effect of teacher's genders on students' prosocial behavior is independent of the group learning effect. This seems to suggest that

female teachers may be giving their young students instruction that is not required by the curriculum; namely, lessons on empathy. This is, however, only speculation and the hypothesis will require further testing. Overall, our work contributes to the existing literature on the roles that teachers' genders play in influencing the behaviors and psychology of their students.

Like all empirical work, this study is imperfect. Legitimate concerns are that the key independent variable (that is, the teacher's gender), is a recall variable and therefore subject to the measurement errors bias[5]. Further, the dependent variable is either binary or latent, implying a significant loss of information that could have been captured with a continuous dependent variable. Finally, the data is cross-sectional, not a panel. These concerns do not mean that the paper is not valuable. In contrast, they mean that further work on the effects of teachers' genders on students 'prosocial preferences is warranted.

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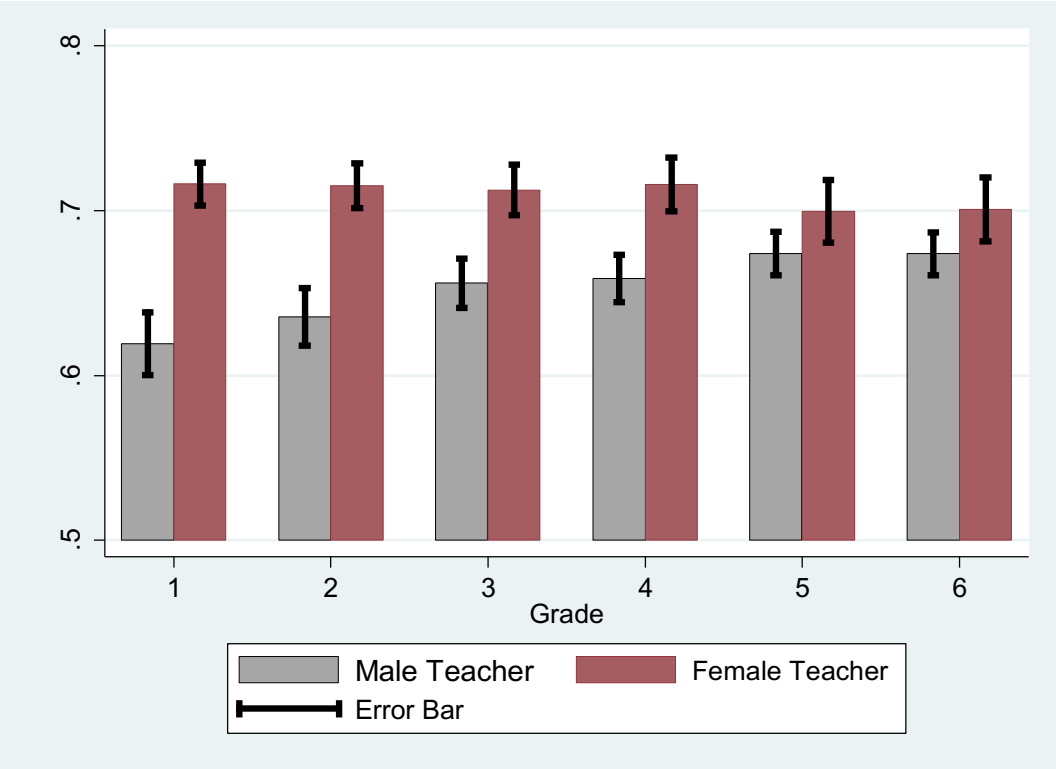
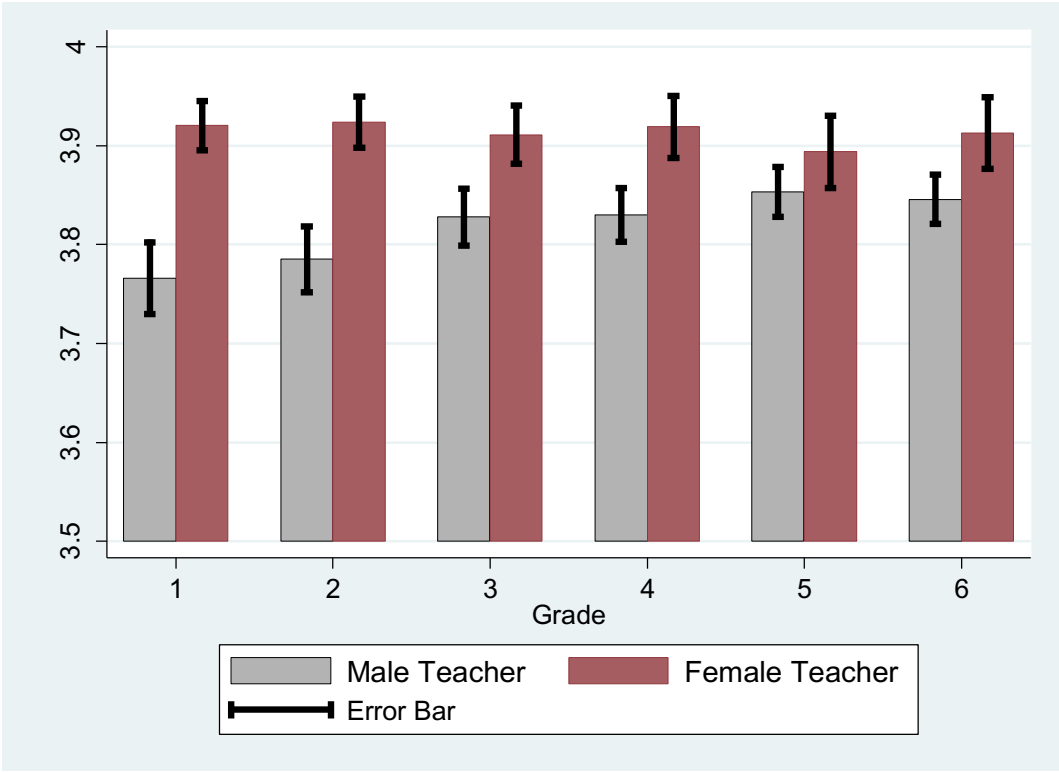
Figure 1. Comparison of charitable donations by students of female vs. male teachers in each primary school grade



Note: Proportion of respondents who have donated to any of the earthquakes (the Great Hanshin-Awaji, the Great East Japan Earthquake, Kuamamoto). The error bar represents the 90% confidence intervals.

Figure 2: **Comparison of attitudes towards the government's role in preparing for a natural disaster by students of female vs. male teachers in each primary school grade**



Note: The "Importance of Disaster" variable is derived from the following question: "*Do you agree that a government should play a critical role in preparing for natural disaster? 1. Completely disagree … 5. Completely agree*." The error bar represents the 90% confidence intervals.

Table 1: Charitable donations and teachers' genders (Marginal Probit regressions)

	(1) ***Charity***	**(2)** ***Charity Hanshin Ages>=40***	**(3)** ***Charity East Japan Ages>=25***	**(4)** ***Charity Kumamoto***	**(5)** ***Charity Kumamoto***
Female teacher in 1st year.	0.05*** (0.01)	0.06*** (0.02)	0.05*** (0.01)	0.04*** (0.01)	0.05*** (0.01)
Female teacher in 2nd year.	0.01 (0.02)	–0.004 (0.02)	0.01 (0.02)	–0.01 (0.02)	–0.02 (0.02)
Female teacher in 3rd year.	0.01 (0.01)	–0.01 (0.02)	0.01 (0.01)	0.02 (0.02)	0.02 (0.02)
Female teacher in 4th year.	0.02 (0.02)	–0.002 (0.02)	0.02 (0.02)	0.01 (0.02)	0.01 (0.02)
Female teacher in 5th year.	0.004 (0.02)	0.03 (0.03)	–0.003 (0.02)	–0.01 (0.02)	–0.002 (0.03)
Female teacher in 6th year.	0.01 (0.02)	–0.05 (0.03)	0.02 (0.02)	–0.002 (0.02)	0.002 (0.02)
Group_Edu	0.05*** (0.01)	0.08*** (0.02)	0.06*** (0.01)	0.07*** (0.01)	0.06*** (0.02)
Household income (in $10,000)					0.01*** (0.003)
Sisters	0.01 (0.01)	0.01 (0.01)	0.03*** (0.01)	0.01 (0.01)	0.01 (0.01)
Brothers	0.02*** (0.007)	0.03** (0.01)	0.03*** (0.01)	0.01 (0.01)	0.02 (0.01)
Age_Hanshin		0.03** (0.01)			
Age_Hanshin square		–0.02 (0.02)			
Age_East Japan			0.02*** (0.004)		
Age_East Japan square			–0.01*** (0.004)		
Age	0.02*** (0.001)			0.02*** (0.004)	0.01* (0.005)
Age Square	–0.01** (0.04)			–0.01*** (0.005)	–0.005 (0.006)
Women	0.07** (0.01)	0.08*** (0.02)	0.08*** (0.01)	0.04*** (0.01)	0.05*** (0.01)
Variables in 2016	No	No	No	No	Yes
Pseudo R-squared	0.07	0.05	0.06	0.04	0.04
Observations	6,975	4,678	6,757	6,975	5,868

Note: ***, ** and * denote statistical significance at the 1%, 5% , and 10% levels, respectively. Numbers without parentheses are marginal effects. Numbers in parentheses are standard errors, clustered by residential prefectures. Marginal effects of Age_square and its standard error are multiplied by 100 for the convenience of readers' interpretation. Control variables include educational background dummies, number of children, marital status dummies, job dummies, and current residential prefecture dummies. In column (2), the sample is limited to respondents who were over 40 years old in 2016, because respondents younger than 40 years old would have been younger than 19 years old in 1995 (when the Great Hanshin Awaji earthquake took place). In column (3),the sample is limited to respondents who were over 25 years old in 2016, because respondents younger than 25 years old would have been younger than 20 years old in 2011 (when the Great East Japan earthquake took place). Ages are at 1995 and 2011, in columns (2) and (3), respectively. They are labeled as "*Age_Hanshin*" and "*Age_East*

Japan." Dependent variables captured respondents' past behavior. Hence, in order to avoid problems of reverse causality, in columns (1) - (3), we did not include current social and economic condition variables (such as income level, marital status dummies, job dummies, and number of children). For comparing the results of "*Charity Kumamoto*" with other results, we also excluded these variables in column (4). Parents' educational background was also controlled by using dummies. "*Income"* is household income (measured in "million yen," which is almost equivalent to $10,000 USD).

Table 2: Charitable donations and teachers' genders according to respondents' genders (Marginal Probit regressions)

	Male					Female				
	(1) ***Charity***	**(2)** ***Charity Hanshin Ages>=40***	**(3)** ***Charity East Japan Ages>=25***	**(4)** ***Charity Kumamoto***	**(5)** ***Charity Kumamoto***	**(6)** ***Charity***	**(7)** ***Charity Hanshin Ages>=40***	**(8)** ***Charity East Japan Ages>=25***	**(9)** ***Charity Kumamoto***	**(10)** ***Charity Kumamoto***
Female teacher in 1st year.	0.05**	0.06**	0.06**	0.06***	0.06***	0.05**	0.05*	0.04	0.02	0.04*
	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)	(0.02)
Female teacher in 2nd year.	0.01	–0.02	0.02	–0.02	–0.03*	0.01	0.02	–0.001	0.01	0.01
	(0.02)	(0.04)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)
Female teacher in 3rd year.	0.005	–0.02	0.02	0.02	0.03	0.01	–0.006	–0.003	0.03	0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Female teacher in 4th year.	0.03	0.01	0.01	0.02	0.03	0.02	–0.01	0.02	–0.01	– 0.02
	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Female teacher in 5th year.	–0.01	0.03	–0.02	–0.05**	–0.03	0.03	0.02	0.02	0.04	0.03
	(0.03)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.04)	(0.03)	(0.04)	(0.04)
Female teacher in 6th year.	0.01	–0.05	0.03	0.01	0.002	–0.001	–0.04	0.004	–0.02	0.006
	(0.03)	(0.04)	(0.03)	(0.02)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)
Group_Edu	0.07***	0.08***	0.06***	0.06***	0.05**	0.04**	0.08***	0.05***	0.08***	0.08***
	(0.03)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)
Variables in 2016	No	No	No	No	Yes	No	No	No	No	Yes
Pseudo R-squared	0.07	0.05	0.05	0.04	0.05	0.09	0.08	0.07	0.05	0.06
Observations	3,777	2,482	3,655	3,777	3,243	3,192	2,188	3,096	3198	2,625

Note: *** and * denote statistical significance at the 1% and 10% levels, respectively. Numbers without parentheses are marginal effects. Numbers in parentheses are standard errors clustered by residential prefectures. The set of control variables in columns (1) and (5) are the same as those in column (1) in Table 1. The set of control variables in columns (2) and (6) are the same as those in column (2) of Table 1. The set of control variables in columns (3) and (7) are the same as those in column (3) of Table 1. The set of control variables in columns (4) and (8) are the same as those of column (4) in Table 1.

Table 3: Individuals' attitudes towards the government's role in preparing for a natural disaster according to teachers' genders (OLS regressions)

	(1) ***All***	(2) ***Male***	(3) ***Female***
Female teacher in 1st year.	0.09** (0.04)	0.09* (0.05)	0.09* (0.05)
Female teacher in 2nd year.	0.03 (0.04)	0.02 (0.05)	0.03 (0.04)
Female teacher in 3rd year.	–0.01 (0.03)	0.02 (0.04)	–0.05 (0.04)
Female teacher in 4th year.	0.03 (0.02)	–0.02 (0.03)	0.09** (0.03)
Female teacher in 5th year.	–0.04 (0.03)	–0.04 (0.06)	–0.03 (0.05)
Female teacher in 6th year.	0.05 (0.04)	0.09 (0.06)	0.02 (0.06)
Group_Edu	0.11*** (0.02)	0.12*** (0.03)	0.10*** (0.03)
Income	0.01** (0.006)	0.02** (0.01)	0.01 (0.01)
Sisters	–0.01 (0.01)	0.002 (0.02)	–0.01 (0.02)
Brothers	0.01 (0.02)	0.02 (0.02)	0.02 (0.02)
Age	–0.01 (0.01)	–0.003 (0.01)	–0.01 (0.01)
Age_Square	0.02** (0.01)	0.02** (0.01)	0.02** (0.01)
Women	– 0.05 (0.03)		
R-squared Observations	0.05 5,868	0.06 3,243	0.07 2,625

Note: ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Numbers without parentheses are coefficients which can be considered as marginal effects. Numbers in parentheses are standard errors clustered by residential prefectures. In all columns, variables from Table 2 are included. However, these estimates are not reported.

Table 4: Individuals' attitudes towards the government's role in preparing for a natural disaster according to teachers' genders (OLS regressions)

	(1)	(2)	(3)	(4)
Female teacher in 1st year.	0.11** (0.04)	0.10** (0.04)	0.09* (0.04)	0.09* (0.04)

Female teacher in 2nd year.	0.02 (0.04)	0.02 (0.04)	0.02 (0.04)	0.02 (0.04)
Female teacher in 3rd year.	–0.01 (0.03)	–0.01 (0.03)	–0.01 (0.03)	–0.02 (0.03)
Female teacher in 4th year.	0.01 (0.03)	0.01 (0.03)	0.01 (0.03)	0.01 (0.03)
Female teacher in 5th year.	–0.07* (0.04)	–0.08* (0.04)	–0.08* (0.04)	–0.08* (0.04)
Female teacher in 6th year.	0.04 (0.04)	0.05 (0.04)	0.04 (0.04)	0.04 (0.04)
Group_Edu	0.09*** (0.03)	0.07*** (0.02)	0.08*** (0.02)	0.08*** (0.02)
Charity Hanshin		0.19*** (0.03)	0.08** (0.03)	0.06* (0.03)
Charity East Japan			0.22*** (0.04)	0.20*** (0.04)
Charity Kumamoto				0.06** (0.03)
R-squared	0.05	0.06	0.07	0.07
Observations	4,056	4,056	4,056	4,056

Note: ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Sample includes only people aged 40 and over. Numbers without parentheses are coefficients which can be considered as marginal effects. Numbers in parentheses are standard errors clustered by prefectures. In all columns, variables from Table 3 are included. However, these estimates are not reported.

Table 5: Individuals' attitudes towards the government's role in preparing for a natural disaster according to teachers' and respondents' genders

	Male					Female		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Female teacher in 1st year.	0.12** (0.05)	0.11** (0.05)	0.11** (0.05)	0.11** (0.05)	0.08 (0.06)	0.07 (0.06)	0.06 (0.06)	0.06 (0.06)
Female teacher in 2nd year.	0.02 (0.06)	0.02 (0.06)	0.02 (0.06)	0.02 (0.06)	0.02 (0.05)	0.01 (0.05)	0.02 (0.05)	0.02 (0.05)
Female teacher in 3rd year.	0.02 (0.05)	0.02 (0.05)	0.02 (0.04)	0.02 (0.04)	–0.08 (0.05)	–0.08 (0.05)	–0.07 (0.05)	–0.07 (0.05)
Female teacher in 4th year.	–0.04 (0.04)	–0.05 (0.04)	–0.05 (0.04)	–0.05 (0.04)	0.08* (0.04)	0.08** (0.04)	0.08* (0.04)	0.08* (0.04)
Female teacher in 5th year.	–0.07 (0.06)	–0.07 (0.06)	–0.07 (0.06)	–0.07 (0.06)	–0.07 (0.05)	–0.07 (0.05)	–0.07 (0.05)	–0.07 (0.05)
Female teacher in 6th year.	0.06 (0.06)	0.07 (0.06)	0.07 (0.06)	0.07 (0.06)	0.02 (0.06)	0.02 (0.06)	0.02 (0.06)	0.02 (0.06)
Group_Edu	0.09** (0.04)	0.08** (0.04)	0.08** (0.04)	0.08** (0.04)	0.07 (0.04)	0.06 (0.04)	0.06 (0.04)	0.06 (0.04)
Charity Hanshin		0.15*** (0.03)	0.06 (0.05)	0.04 (0.05)		0.23*** (0.04)	0.09** (0.04)	0.09** (0.04)
Charity East Japan			0.16*** (0.05)	0.12** (0.05)			0.30*** (0.06)	0.29*** (0.06)
Charity Kumamoto				0.09* (0.05)				0.004 (0.06)
Pseudo R-squared	0.08	0.09	0.09	0.09	0.08	0.10	0.11	0.11
Observations	2,216	2,216	2,216	2,216	1,840	1,840	1,840	1,840

Note: ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Sample includes only people aged 40 and over. Numbers without parentheses are marginal effects. Numbers in parentheses are standard errors clustered by residential prefectures. Dependent variables are equivalent to those in Table 4 (with the exception of sex dummy (*Women)*).

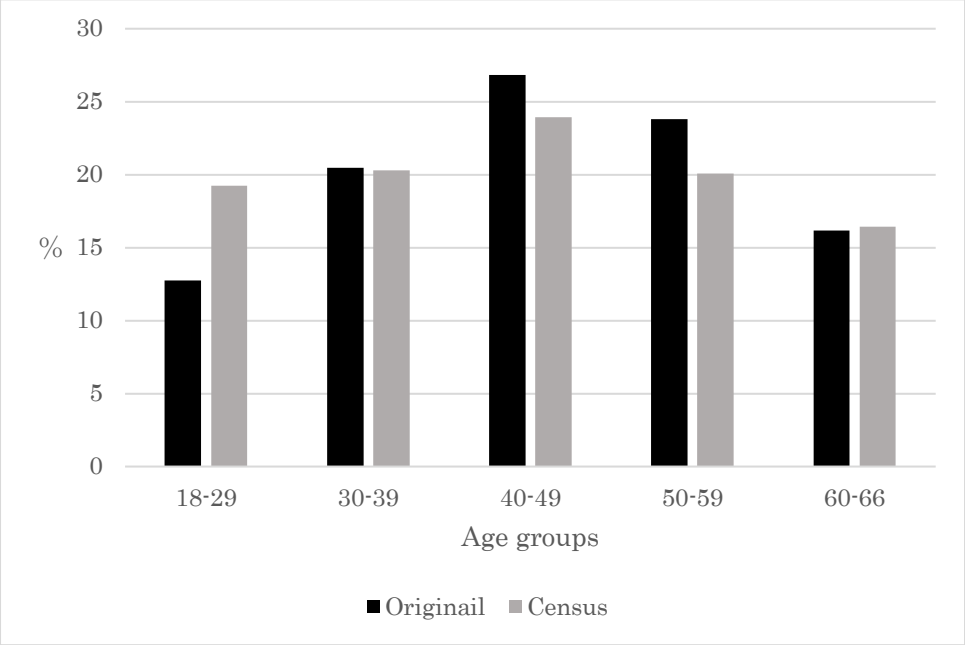
Appendix
Table A1: Definitions of key variables and their basic statistics

Variables	Definition	Mean	Standard deviation	Min.	Max.
Dependent Variables					
Charity	Equals 1 if the respondent has donated to any of one of the earthquakes (the Great Hanshin-Awaji, the Great East Japan, Kumamoto), 0 otherwise	0.68	0.44	0	1
Charity Hanshin	Equals 1 if the respondent has donated to the Great Hanshin-Awaji earthquake , 0 otherwise	0.57	0.49	0	1
Charity East Japan	Equals 1 if the respondent has donated to the Great East Japan earthquake , 0 otherwise	0.60	0.49	0	1
Charity Kumamoto	Equals 1 if the respondent has donated to the Kumamoto earthquake , 0 otherwise	0.42	0.49	0	1
Importance of Disaster	Do you agree that the government should play a critical role in preparing for natural disaster? 1 (strongly disagree) – 5 (strongly agree)	3.86	0.88	1	5
Independent Variables					
Female teacher in 1st year.	Equals 1 if class teacher was female at the 1st grade in elementary school, 0 otherwise	0.65	0.48	0	1
Female teacher in 2nd year.	Equals 1 if class teacher was female at the 2nd grade in elementary school, 0 otherwise	0.58	0.49	0	1
Female teacher in 3rd year.	Equals 1 if class teacher was female at the 3rd grade in elementary school, 0 otherwise	0.46	0.50	0	1
Female teacher in 4th year.	Equals 1 if class teacher was female at the 4th grade in elementary school, 0 otherwise	0.41	0.49	0	1
Female teacher in 5th year.	Equals 1 if class teacher was female at the 5th grade in elementary school, 0 otherwise	0.31	0.47	0	1
Female teacher in 6th year.	Equals 1 if class teacher was female at the 6th grade in elementary school, 0 otherwise	0.30	0.46	0	1
Group_Edu	Assign a value of 1 if there was a task in which students worked together as a group at primary school; if not, assign a value of 0.	0.42	0.49	0	1
Income	Household income (Million yens)	4.85	2.23	1.0	12.0
Age	Respondent's age	45.5	11.8	18	67
Brothers	Number of brothers	0.66	0.74	0	6
Sisters	Number of sisters	0.65	0.72	0	6
Women	Equals 1 if the respondent is a woman, 0 otherwise	0.54	0.50	0	1

Note: Statistics for *Charity Hanshin* were calculated based on a sub-sample limited to those over 40 years old, as they would have been over 18 years old when the Hanshin-Awaji earthquake occurred. Apart from the job dummies indicated, 13 other job dummies were included in the estimation model: (1) Chief executive officer; (2) Temporary employee; (3)

Public officer; (4) Specialists (lawyers, accountants, etc.); (5) self-employed; (6) SOHO (Small Office Home Office); (7) Part-time worker; (8) Outside worker; (9) House worker; (10) University student; (11) High-school student; (12) No job or retired; (13) Other worker.

Figure A1. Composition of age groups compared to Census.



Notes

[1] While little research has been carried out on the intergenerational transmission of charitable giving, other studies have focused on intergenerational transmission of other values, ideas, and behaviors. For example, Farre and Vella (2013) show that a mother's attitudes towards working women strongly predict how her sons (but not so much her daughters), view this issue in their youth. Loureiro et al. (2010) document evidence that daughters are more influenced by their mothers' smoking behaviors, whereas sons primarily imitate their fathers' smoking decisions. There is also evidence of gender differences in the intergenerational transference of risk and trust attitudes (Dohmen et al., 2008), language proficiency (Casey and Dustmann, 2008), internalizing and externalizing behaviors (Kim et al., 2009), and even mental health and wellbeing (Powdthavee and Vignoles, 2008).

[2] This survey was designed to maintain a representative sample of the Japanese population. See Figure A1 in the Appendix.

[3] Data is available from the official website of the Statistics Bureau, Ministry of Internal Affairs and Communications http://www.soumu.go.jp/johotsusintokei/statistics/statistics05.html (accessed April 5, 2018).

[4]. Descriptive statistics of the main variables are reported in Table A1 in the Appendix.

[5] However, since measurement errors imply a downward bias on our estimates, our findings would likely have been even more robust had we been able to take the measurement error bias into account.