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Childhood Sporting Experience and Charitable Donations to Disaster Victims

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Abstract: I investigated how people's childhood experiences of involvement in team sports helped them develop non-cognitive skills, which later prompted them to make charitable donations to disaster victims. I independently collected individual-level data from approximately 7000 observations in 2016. The instrumental variable (IV) method was used for the estimations. In the specification of the IV model, sporting experience and informal education in childhood were used as exogenous IV. I found that (1) sporting experiences cause people to have positive subjective views of reciprocity, (2) team sports experience has a larger effect on people than individual sports experience, and (3) the above lead people to donate to disaster victims of enormous disasters such as the Great East Japan Earthquake.

Keywords: donation; natural disasters; informal school curriculum; childhood sporting experience; social capital

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1. Introduction

Unexpected exogenous shocks, such as natural disasters, cause people to have great difficulty in adjusting to the heat-rending situation. Natural disasters have a devastating impact on economic conditions (Yamamura 2013, 2015b). The degree of the impact varies according to the social and economic status of the people, which increases income inequality (Masozera et al. 2007; Sawada and Shimizutani 2008; Zoraster 2010; Miljkovic and Miljkovic 2014; Yamamura 2015b; Howell and Elliott 2019; Cordoba and Uliczka 2021). To a certain extent, people can cope with the economic losses inflicted by disasters through market mechanisms. For instance, damage from a disaster can be partially covered if one has insurance. Suppose people hold a large number of collateralizable assets before a disaster. They can be free from a binding borrowing constraint and thus maintain their consumption levels by borrowing (Sawada and Shimizutani 2008). However, some people cannot rely on market mechanisms to lessen the damage if they are too poor to insure against disasters and do not have assets. Hence, the government is expected to grant living allowances and housing subsidies to victims of disasters and create jobs to mitigate the shock to employment.

However, there is a possibility that some victims cannot be supported by the government, partly because they cannot satisfy the requirements of the formal rule. Some informal reciprocal mechanisms are required to supplement the role of the market and government in aiding such victims (Hayami and Godo 2005; Rajan 2019). Various studies have shown that natural disasters influence individuals' perceptions and behaviors to foster social capital (Yamamura 2010, 2014; Yamamura et al. 2015), thus enhancing community mechanisms. Citizens must engage in voluntary behavior to mitigate the risk of damage incurred by disasters (Yamamura 2016). Existing studies have found that charitable giving increases with inequality aversion (Derin-Güre and Uler 2010; Yamamura 2012). Recent natural disasters in Japan were so devastating that these led to a nationwide appeal for help from people across the country. Consequently, this has led to a massive surge in donations directed toward these areas (Yamamura et al. 2022). Hence, charitable donations

can be anticipated to take a role in the monetary support of those who confront the harsh realities in the aftermath of a disaster. Some anonymous benefactors trigger a virtuous cycle if paying it forward is contagious and bears ripple effects in the society. The creation of the virtuous cycle is pivotal to bringing resurgence of the economy. It is worthy to explore what type of people assume a leading role in the mechanism, which boosts the charitable donation to cope with the disaster when neither government nor market function effectively.

Many works are related to the issue of the formation of non-cognitive skills in the field of behavioral and education economics (Hryshko et al. 2011; Fehr et al. 2008; Algan et al. 2013; Heckman et al. 2010a, 2010b, 2013). This paper investigates how childhood experiences form non-cognitive skills influencing charitable donation. This study hypothesized that childhood experience forms the mind of mutual aid, which enhances charitable donations to victims of disasters. In 2016 and 2017, I collected individual data from all over Japan through an Internet survey. The subsample includes approximately 7000 observations.

This study contributes to the study of charitable giving by bridging childhood sporting activities and non-cognitive skills in terms of behavioral economics. Following previous work (Yamamura and Tsutsui 2019), this study used types of experience and education in the period of primary school children as exogenous instrumental variables (IV) to control for the endogeneity of the proxy variable of reciprocity. This approach captures non-cognitive skills while examining the mechanism of charitable giving. The major finding of this analysis was that sporting experiences and informal education developed non-cognitive skills. This, in turn, enhances charitable giving in areas damaged by earthquakes in Japan. Findings using these data support this hypothesis. However, estimation results obtained under the specific Japanese society and sports club system where primary school pupils have opportunity to enter local sports club such as baseball and football outside school.[1]

The structure of the remainder of this study is as follows. Section 2 explains the setting and design of data collection. In addition, the description and basic statistics of variables are introduced. Section 3 describes the empirical method and the identification strategy which is employed. In Section 4, results of estimations are shown. A conclusion is offered in the final section.

2. The Setting and Data

2.1. The Setting

Several large-scale earthquakes have hit Japan with magnitudes of six or more in recent times. After entering the century, the Great East Japan and Kumamoto earthquakes occurred in 2011 and 2016, respectively. In the Great East Japan Earthquake, there were over 15,200 deaths, while the total damage to property and capital stock was estimated to be approximately USD 20,000–30,000 billion (Sawada 2011). Compared with the Great East Japan Earthquake, the damage from the Kumamoto earthquake was estimated to be smaller. Nevertheless, 228 people died owing to the earthquake, and approximately 200,000 homes were destroyed or suffered partial destruction (Cabinet Office, Government of Japan 2017). Japanese families are generally different from those of the Western countries partly because of cultural difference (Georgas et al. 2006).

2.2. The Data Collection Process

I commissioned the Nikkei Research Company, which have had much experience in conducting academic research, to conduct an Internet survey of individuals' charitable behavior three months after the Kumamoto earthquake that hit the southern part of Japan in July 2016. Nikkei Research Company recruited 12,176 people to complete the questionnaire.

To investigate the influence of childhood experiences on charitable behaviors, we conducted a follow-up survey on the same individuals in July 2017. This follow-up survey was explicitly designed to include questions aimed at eliciting the following information about the respondents' childhoods: sporting experiences, frequency of eating breakfast, and information on the respondent's educational curriculum, such as working and learning

together in primary school. From the sample, in addition to charitable behaviors for the Great East Japan Earthquake that occurred in 2011 and the Kumamoto earthquake, I collected basic economic and demographic data such as the respondents' and their parents' educational backgrounds, the respondents' gender, age, household income, number of siblings, and view about reciprocity.

I obtained 9130 observations during the follow-up survey. Of those, 7107 individuals participated in both the 2016 and 2017 surveys. Thus, the retention rate was approximately 75%. In the sample, males and females comprised 46% and 54%, respectively. This is similar in gender split to that collected in the 2015 Japan Census. The number of observations drops slightly in our estimations as some respondents replied that they "do not remember" their experiences during their childhood period in the questionnaire. As a result, it might be the case that we have more observations from younger generations as they are more likely to still remember childhood experiences, which could potentially result in a measurement error bias.

However, let us pay careful attention to the fact that the valid response rate that we received for questions on childhood experiences is about 80%. This tendency is almost observed for the same across all age groups. Hence, this alleviates concerns about possible measurement error bias. In addition, an information technology survey in 2015 on indicates that around 90% of the working-age population in Japan are web-users. This alleviates the concerns of selection bias of web-users being different from the rest of the population in our sample.[2] However, it should be noted that the ages of people in the Internet survey are from 18 to 67, and so the ages of some respondents exceed the age range of the working population.

2.3. Characteristics of the Data

Table 1 lists the descriptions and basic statistics of the key variables used for the estimates.

Table 1. Descriptions about variables and its statistics.

Variables	Description	Mean	Max	Min
EAST DISASTER	Equals 1 if the respondent has donated to the Great East Japan Earthquake, otherwise, 0	0.60	1	0
KUMAMOTO DISASTER	Equals 1 if the respondent has donated to the Kumamoto earthquake, otherwise, 0	0.42	1	0
RECIPROCITY	If someone does me a favor, I am prepared to return it 1 (strongly disagree) to 5 (strongly agree)	4.21	5	1
BREAKFAST HABIT	Frequency of eating breakfast during primary school age (about 6–12 years old) 1 (very rare) to 5 (every morning)	4.70	5	1
EDUCATION	Respondent's schooling years	14.7	18	9
FATHER EDUCATION	Father's schooling years	12.8	18	9
MOTHER EDUCATION	Mother's schooling years	12.2	18	9
TEAM SPORTS	It equals 1 if the respondent participated in team sports during primary school age (about 6–12 years old), otherwise, 0	0.24	1	0
INIDIVIDUAL SPORTS	It equals 1 if the respondent participated in individual sports during primary school age (about 6–12 years old), otherwise, 0	0.12	1	0

Table 1. *Cont.*

Variables	Description	Mean	Max	Min
AGE	Respondents' age	45.5	67	18
AGE SQUAREARE	Square of Respondents' age	2211	4356	324
BROTHER	Number of brothers	0.66	6	0
SISTER	Number of sisters	0.65	6	0
MALE	Equals 1 if the respondent is male, otherwise, 0	0.46	1	0
GROUP LEARN	It equals 1 if there was a task in which students worked together as a group in primary school, otherwise, 0	0.43	1	0

Note: Sample is used in estimations for Columns (2) and (4) for Tables 2 and 3.

Table 2. Baseline estimation about determinants of charitable donation (OLS model): Dependent variable is EAST DISASTER and KUMAMOTO DISASTER.

	(1) EAST DISASTER	(2) EAST DISASTER	(3) KUMAMOTO DISASTER	(4) KUMAMOTO DISASTER
RECIPROCITY	0.11 *** (19.7)	0.10 *** (18.0)	0.08 *** (11.3)	0.08 *** (10.9)
BREAKFAST HABIT	0.02 *** (5.14)	0.02 *** (2.84)	0.02 *** (3.09)	0.01 (1.24)
EDUCATION	0.01 *** (3.75)	0.005 (1.57)	0.003 (0.89)	−0.003 (−0.92)
AGE	0.01 ** (2.64)	0.01 ** (2.25)	0.01 (1.64)	0.006 (1.12)
AGE SQUARE	−0.04 (−1.00)	−0.04 (−0.92)	−0.04 (−0.84)	−0.03 (−0.44)
MALE	−0.09 *** (−7.91)	−0.09 *** (−7.91)	−0.05 *** (−4.36)	−0.05 *** (−4.03)
FATHER EDUCATION		0.004 (1.50)		0.004 (1.45)
MOTHER EDUCATION		0.003 (0.99)		0.003 (1.14)
BROTHER		0.03 *** (3.56)		0.007 (0.68)
SISTER		0.02 (1.54)		0.002 (0.24)
Income dummies, Constant	Yes	Yes	Yes	Yes
R-square	0.09	0.08	0.05	0.04
Observations	7015	5825	7015	5825

Notes: *** and ** denote statistical significance at the 1% and 5% levels, respectively. The t-values were calculated based on robust standard errors clustered by residential prefecture. "Yes" means that variables are incorporated as independent variables. For the convenience of the reader's interpretation, the coefficient of AGE SQUARE was multiplied by 1000. Seventeen income dummies were incorporated as independent variables, although their results have not been reported.

Table 3. Estimation about determinants of charitable donation (IV model): dependent variable is EAST DISASTER and KUMAMOTO DISASTER.

	Second Stage Results			
	(1) EAST DISASTER	**(2) EAST DISASTER**	**(3) KUMAMOTO DISASTER**	**(4) KUMAMOTO DISASTER**
RECIPROCITY	0.43 *** (7.83)	0.40 *** (5.48)	0.48 *** (6.96)	0.48 *** (5.59)
BREAKFAST HABIT	−0.01 (−0.99)	−0.005 (−0.53)	−0.02 ** (−2.28)	−0.02 * (−1.92)
EDUCATION	0.01 *** (2.85)	0.005 (1.27)	0.002 (0.56)	−0.003 (−0.63)
AGE	0.002 (0.65)	0.003 (0.73)	−0.001 (−0.21)	−0.003 (−0.37)
AGE SQUARE	0.02 (0.52)	0.02 (0.48)	0.03 (0.54)	0.06 (0.74)
MALE	−0.05 *** (−3.16)	−0.05 *** (−3.99)	−0.005 (−0.26)	−0.01 (−0.72)
FATHER EDUCATION		0.003 (0.77)		0.002 (0.58)
MOTHER EDUCATION		0.007 * (1.80)		0.007 * (1.95)
BROTHER		0.02 ** (2.43)		−0.001 (−0.08)
SISTER		0.004 (0.36)		−0.01 (−1.10)
	First Stage Results Endogenous Variable: RECIPROCITY			
	Exogenous IV			
TEAM SPORTS	0.13 *** (5.62)	0.96 *** (4.02)	0.13 *** (5.62)	0.96 *** (4.02)
INDIVIDUAL SPORTS	0.07 ** (2.38)	0.04 (1.43)	0.07 ** (2.38)	0.04 (1.43)
GROUP LEARN	0.15 *** (8.33)	0.14 *** (6.43)	0.15 *** (8.33)	0.14 *** (6.43)
	Other IV			
BREAKFAST HABIT	0.89 *** (10.2)	0.07 *** (5.88)	0.89 *** (10.2)	0.07 *** (5.88)
EDUCATION	0.005 (0.11)	−0.005 (−0.07)	0.005 (0.11)	−0.005 (−0.07)
AGE	0.02 *** (3.85)	0.03 *** (3.06)	0.02 *** (3.85)	0.03 *** (3.06)
AGE SQUARE	−0.18 *** (−2.68)	−0.18 *** (−2.68)	−0.18 *** (−2.68)	−0.18 *** (−2.68)
MALE	−0.12 *** (−5.44)	−0.10 *** (−5.06)	−0.12 *** (−5.44)	−0.10 *** (−5.06)

Table 3. *Cont.*

	First Stage Results Endogenous Variable: RECIPROCITY			
	Exogenous IV			
FATHER EDUCATION		0.003 (0.56)		0.003 (0.56)
MOTHER EDUCATION		−0.01 ** (−2.48)		−0.01 ** (−2.48)
BROTHER		0.02 (0.09)		0.02 (0.09)
SISTER		0.03 ** (2.65)		0.03 ** (2.65)
Under-identification (Robust chi-square stat)	158 $p = 0.00$	82.0 $p = 0.00$	158 $p = 0.00$	82.0 $p = 0.00$
Weak-identification (Cragg-Donald F stat)	35.6	21.9	35.6	21.9
Stock-Yogo critical value 5% maximal IV relative bias	13.9	13.9	13.9	13.9
Over-identification (Hansen J-stat)	1.36 $p = 0.51$	1.34 $p = 0.51$	1.31 $p = 0.52$	1.34 $p = 0.51$
Observations	7015	5825	7015	5825

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The z-values were calculated based on robust standard errors clustered by prefecture. The other control variables in Table 2 are also included in the first and second stages of the model. For the convenience of the reader's interpretation, the coefficient of AGE SQUARE was multiplied by 1000.

The proxy variables for charitable behaviors are EAST DISASTER, which is 1 when respondents contributed to the Great East Japan Earthquake, otherwise, 0. KUMAMOTO DISASTER is defined in the same way for the Kumamoto earthquake

The following statements captured the degree of reciprocity, RECIPROCITY, a non-cognitive skill, with responses ranging between 1 (strongly disagree) and 5 (strongly agree): If someone does me a favor, I am prepared to return it.

This statement was used to test how participants understood the importance of cooperation and interdependence. childhood experiences are derived from formal and informal education and social experiences. The "hidden curriculum" can be considered as informal education in the school (Ito et al. 2020). To take an example, the curriculum contains GROUP LEARN, which has 1 for subjects who experienced group work in primary school, and 0 for those did not experience it. Many studies have provided evidence that sports experiences improve life outcomes in adulthood (Rees and Sabia 2010; Pfeifer and Cornelißen 2010; Lechner 2009; Lechner and Sari 2015; Cabane et al. 2016). Therefore, the respondents' sporting experiences is incorporated when they were school-aged children. The sporting experiences can be classified into two types: First, team sports experiences such as football, basketball, and baseball. Second, individual sports such as athletic sports, boxing and Judo. From team sports experiences, children are able to learn importance of teamwork, cooperation and so interpersonal relationship to achieve the purpose, which is also critical over the course of life (Yamamura and Tsutsui 2019). Through sports activities, children have opportunities to have a relation with players from other schools and communities. Taking part in sports exhorts children to learn how to interact and interexchange with players from strange regions. Accordingly, sporting activities erase their boundaries between their schools and communities and strange ones. As a result of experiences from participating in sports, people come look at the world with a broader field of vision. I used

a dummy, TEAM SPORTS (INIDI SPORTS PRIM), which is 1 if the respondent took part in team (individual) sports during primary school and 0 if one did not participate.

3. Method and Identification Strategy

In Figure 1, the black arrow from childhood experience to non-cognitive skills indicates that non-cognitive skills were formed in childhood. The black arrow from non-cognitive skills to charitable donation means that non-cognitive skills lead people to contribute to charitable donation in adulthood. However, this channel was concealed behind the shaded arrow, in which childhood experience directly influenced charitable donation. I plan to empirically investigate the channel indicated by the black arrows using an individual-level dataset.

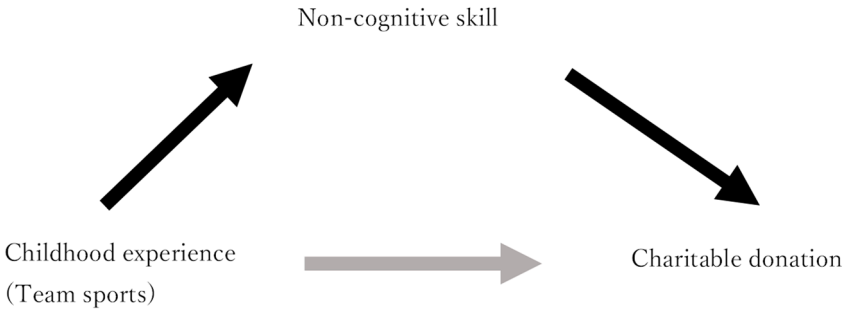

Figure 1. Mechanism by which childhood experiences cause persons to donate via the formation of non-cognitive skills. Notes: The shaded arrow exhibiting the direct effect, which is generally weak; childhood experiences are therefore appropriate for IVs.

3.1. Baseline Model

In the baseline model, the estimated function takes the following form, enabling us to assess non-cognitive skills in relation to charitable donations:

$$\begin{aligned} &\text{EAST DISASTER (or KUMAMOTO DISASTER)}_i \\ &= \alpha_0 + \alpha_1 \text{ RECIPROCITY}_i + \alpha_2 \text{ BREAKFAST HABIT} + \alpha_3 \text{ EDUCATION}_i, \\ &+ \alpha_4 \text{ AGE}_i + \alpha_5 \text{ AGE SQUARE}_i + \alpha_6 \text{ MALE}_i + X_i \text{ B} + u_i. \end{aligned} \quad (1)$$

The key variables were non-cognitive skills. We have contained RECIPROCITY. I infer that the ability to understand the benefits of mutual dependence is necessary for dealing with unexpected incidents such as natural disasters. Living an ordered life is important, particularly for children. Regular breakfast consumption performs a critical role in developing a sound body and mind during childhood. Sound eating habits seem to foster non-cognitive skills, hence the inclusion of BREAKFAST HABIT. Therefore, the coefficients of the non-cognitive skill variables, such as RECIPROCITY and BREAKFAST HABIT, are expected to be positive. I contained an independent variable to divide human capital into non-cognitive and cognitive skills. Charitable behavior may be related to age, and the relationship is potentially nonlinear. Therefore, I added AGE and its square, AGE SQUARE.

Xi represents the vector of the control variables, and B represents the vector of their coefficients. FATHER EDUCATION and MOTHER EDUCATION, parents' educational backgrounds, are incorporated to capture childhood family conditions. Furthermore, an individual's redistribution preferences depend on the existence of siblings and their gender (Yamamura 2015a). Charitable donations can be considered voluntary income redistribution; BROTHER and SISTER are incorporated. In addition, as control variables, I incorporate 17 income dummies, although their results are not reported in Tables 2 and 3.

Endogeneity bias possibly occurs in the baseline model because the causality between charitable behaviors and non-cognitive skills is unclear. Charitable behavior and the degree of reciprocity can be determined simultaneously by unobserved circumstances. Moreover,

the third group of factors may determine the dependent and key independent variables. The error term, including the third factor, is correlated with the key independent variables in this function. This, inevitably, causes endogeneity bias. Childhood experiences were used as an exogenous IV to conduct an IV model estimation to control for this.

3.2. Identification Strategy

It is widely acknowledged that early childhood education performs a crucial role in developing non-cognitive skills, which contributes to entail desirable consequences in adulthood (Heckman et al. 2010a, 2010b, 2013). To put it more specifically, many works have investigated how and the extent to which specific features of education form preferences and worldviews (Aspachs-Bracons et al. 2008; Hryshko et al. 2011; Milligan et al. 2004). Teaching practices in schools are observed to change students' beliefs; there is a positive causal relationship between "working in groups" and students' belief in cooperation and trust (Algan et al. 2013; Ito et al. 2020). Informal school curricula during childhood are unlikely to enhance charitable behavior directly. However, informal curricula only affect charitable donations through a channel in which these experiences influence non-cognitive skills. In Japan, group work curricula foster non-cognitive skills such as mutual reciprocity (Ito et al. 2020). Hence, group work is adopted in some schools but not in others.

The worldview seems to be fostered during childhood through exchanges with children from unfamiliar schools and communities. Children learn and develop value from experiences outside the closed personal relationships within a school. Many studies have shown that sports perform a vital role in forming cognitive and non-cognitive skills (Rees and Sabia 2010; Pfeifer and Cornelißen 2010; Lechner 2009; Lechner and Sari 2015; Cabane et al. 2016). Children who participate in team sports learn to improve their team performance through communication with team members. Through cooperation between team members, students learn the way of improving team performance. Playing with children who participated in other schools and towns provided opportunities for interchange with children who had learned from different school cultures. As a result of the experiences, the children obtained know-how of bridging a network with unfamiliar and strange groups, which extended the reciprocal relationship.

Following the argument above, I present the function in the first-stage estimate of the IV model to determine non-cognitive skills exogenously. The form of estimated function is formulated as follows.

$$\begin{aligned} \text{RECIPROCITY}_i = \beta 0 + \beta 1\ \text{TEAM\_SPORTS PRIM}_i + \beta 2\ \text{INDI\_SPORTS PRIM}_i \\ + \beta 3\ \text{GROUP\_PRIM}_i + Z_i\ C + e_i. \end{aligned} \quad (2)$$

What has been discussed thus far about informal school curricula leads me to expect the coefficients of GROUP_PRIM to be positive. Childhood sports experiences have been observed to form non-cognitive skills through social learning. Hence, coefficients of the TEAM_SPORTS PRIM and INDIVIDUAL SPORTS are anticipated to show the positive sign. Team sports are more likely to help children learn about interpersonal cooperation in overcoming their opponents than individual sports. Thus, the absolute value of the coefficient of TEAM_SPORTS PRIM are predicted to be larger than that of INDIVIDUAL SPORTS. Simultaneously, childhood sporting experiences are unlikely to be directly associated with charitable donations after children become adults. Thus, the proxy variables for sporting experiences can be considered exogenous IV. In the first and second stages of the IV model, the control variable vectors are represented by Zi, and C is the vector of their coefficients.

4. Results

4.1. Basic OLS Model

Table 2 shows the estimated results of the baseline OLS model. Looking results reveals that the coefficient of non-cognitive skills, RECIPROCITY, shows positive sign and statistical significance at the 1% level. This means that people who consider mutual benefit important tend to contribute toward charitable donations to victims of the massive

earthquake. Coefficient's sign of BREAKFAST HABIT is positive and statistically significant at the 1% level, except for Column (4). These results are consistent with this hypothesis.

Concerning the control variables, the coefficient of EDUCATION is positive and statistically significant only in Column (1). The sign of AGE is positive and statistically significant in Columns (1) and (2), whereas AGE SQUARE is not statistically significant in any column. Other variables that capture childhood conditions, such as FATHER EDUCATION, MOTHER EDUCATION, BROTHER, and SISTER, are not statistically significant, except for BROTHER in Column (2). MALE shows a negative sign and statistical significance at the 1% level, meaning females are more likely to donate. The R-squared value was less than 0.1 in all columns. The model's explanatory power is not strong, even though the key variables RECIPROCITY and BREAKFAST HABIT are significantly associated with EAST DISASTER and E_KUM.

4.2. IV Model

In Table 3, the results estimated by the IV Model are exhibited. In Table 3, all OLS model control variables are incorporated, even though the estimates of income dummies are not reported. In the first stage, it is critical to check its validity based on the under-identification test, weak identification test, and over-identification test. These results demonstrate the validity of the estimates. The coefficients of TEAM SPORTS and INDIVIDUAL SPORTS indicate positive signs in all columns. The 1% statistical significance of TEAM SPORTS can be seen in all columns, whereas the statistical significance of INDIVIDUAL SPORTS is not observed in Columns (2) and (4). Furthermore, the coefficients of TEAM SPORTS are larger than those of INDIVIDUAL SPORTS in all columns. This suggests that team sports generally have a greater effect on positive views about reciprocity than individual sports. The coefficients of GROUP_PRIM show a positive sign and statistical significance in all columns. Overall, these findings align with our predictions that childhood experiences and education positively influence non-cognitive skills.

Turning to other variables' results in the first stage, the sign of BREAKFAST HABIT is positive and statistically significant at the 1% level in all columns. Regularly eating breakfast during childhood forms non-cognitive skills, consistent with my inference. AGE and AGE SQUARE showed positive and negative results, respectively. These are statistically significant at the 1% level. This indicates that people become more likely to have a reciprocal view as they age, although their marginal effects decrease. Therefore, non-cognitive skills depend not only on childhood conditions but also on experiences throughout life. A significant negative sign of MOTHER EDUCATION indicates that a highly educated mother reduces the reciprocal view. In other words, this implies that less-educated mothers place more importance on human interaction in traditional society. A significantly positive sign of SISTER indicates that the existence of sisters leads people to place more importance on reciprocity. However, BROTHER scores did not show any statistical significance. Hence, there is a gender difference in sibling effects.

The second-stage results in Table 3 show that the coefficient of RECIPROCITY shows positive signs and statistical significance at the 1% level. Therefore, even after controlling for endogeneity bias, non-cognitive skills formed in childhood lead people to contribute toward charitable donations to victims of massive disasters. Overall, the estimation results support the inference shown in Figure 1.

Regarding the control variables, there are several differences between Tables 2 and 3. The significant positive sign of BREAKFAST HABIT disappeared in all the columns of Table 3. The effects of BREAKFAST HABIT in the first and second stages together indicate that BREAKFAST HABIT has a positive effect on charitable donation by forming non-cognitive skills. This finding is consistent with our inferences. The SISTER score did not show statistical significance in the second stage. Hence, sisters lead people to contribute to charitable donations by forming reciprocal views. The signs of MOTHER EDUCATION become significantly positive in Columns (2) and (4) of Table 3, despite being insignificant in Columns (2) and (4) of Table 2. As shown in the first stage, there was a correlation between

RECIPROCITY and MOTHER EDUCATION. Hence, collinearity problems occurred in the OLS model, and therefore, the standard errors of the MOTHER EDUCATION increased. However, in the second stage of the IV method, collinearity is thought to be controlled, resulting in MOTHER EDUCATION's statistical significance. This indicates that highly educated mothers lead their children to contribute to the donation, although the effect of MOTHER EDUCATION is not through forming a reciprocal view.

As a limitation of this book, we did not scrutinize the mediating factors. To take an example, experience of bearing hardship in the past exhorts people to support others who are in distress. People possibly become more charitable donators to disaster victims if they had a direct or vicarious experience of such a disaster. As family factors, we examine effect of parents' educational background and number of siblings. However, more detailed information such parenting style is not included in the dataset. People who reared in disadvantage households are less inclined to gain returns to college (Cunha and Heckman 2007; Heckman 2000). Parenting style is reflected in the number of books in a house for their children, which plausibly increases the returns to education. In a study of European countries, books in a house are observed to exert long-lasting positive impact on labor productivity (Brunello et al. 2017). In comparison to other countries, a Japanese mother is more inclined to stay close to her child to reduce distance between herself and her child (Georgas et al. 2006). A mother casts indulgent eyes on her child's dependency. Consequently, Japanese college students come to expect their parents to understand them to a very large extent (Muramoto 2003). Such an image of family relationship is stereotyped and widespread in Japanese society. It is plausibly argued that the intimate family relationship forms non-cognitive skills. Considering these works together, parental care early in life improves the cognitive skills as well as non-cognitive ones. However, these issues are beyond the scope of this study. Further, a lack of data did not allow us to explore the mechanisms.

5. Conclusions

This study has empirically examined why people contribute charitable donations to cope with natural disasters, which are unexpected incidents, by considering childhood experiences. I examine the influence of such skills on charitable donations through the channel of non-cognitive skills formed in childhood. Learning experiences from childhood sporting experiences in the past are uninclined to be associated with charitable donation; nevertheless, the experience is thought to form non-cognitive skills. I have treated childhood sporting experiences and education as exogenous IVs that are expected to render reciprocal help, which is a kind of a non-cognitive skill. I controlled for cognitive skills measured by years of schooling and parents' educational backgrounds to distinguish between cognitive and non-cognitive skills. I found the following through the estimations: (1) team sporting experiences and group learning in childhood leads to forming positive views about reciprocity, (2) the effect of team sports experience is larger than that of individual sports, and (3) greater non-cognitive skills lead people to contribute toward charitable donations to victims of natural disasters.

What is observed in results as above leads me to argue that group learning in class and experiences exhort children to interact with strange and unfamiliar ones through participation in sports. Then, this leads people to put importance on reciprocity to cope with unexpected incidents such as natural disasters. The contribution of this paper is to suggest that the experience which enhanced interpersonal exchange in childhood is useful to relieve people under emergent situations where neither market nor government function well. If we can leverage childhood sporting experiences, we can motivate people to cope with natural disasters.

I used the data independently gathered in this analysis. However, the data are limited to Japan, and thus what I argue here may not be applicable to citizens in countries with different historical and cultural background. It is necessary to examine how the findings of this study can be applied to different societies, especially in Western countries. The IV

method is appropriate for controlling endogenous bias, although the validity of exogenous instruments is not entirely secure. Apart from quantitative analysis, it is valuable to conduct research by qualitative approach. Experimental approach is required to scrutinize whether childhood sporting participation is related to charitable giving in the future. Family factors such as parenting style are a vital factor to form non-cognitive skills. However, because of lack of data, family factors cannot be scrutinized, although educational level and number of siblings are considered. What is more, there are plausibly various mediating factors. These are remaining issues for further studies.

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Institutional Review Board Statement: Ethical review and approval were waived for this study. The survey used in this study falls outside the scope of the Japanese government's Ethical Guidelines for Medical and Health Research Involving Human Subjects, and there are no national guidelines for social and behavioral research in Japan. Therefore, our study was conducted in accordance with the Ethical Principles for Sociological Research of the Japan Sociological Society, which does not require an ethical review.

Informed Consent Statement: Informed consent was obtained from all the subjects involved in the study. All survey participants gave their consent to participate in an anonymous online survey by the Nikkei Research Company. The authors did not obtain personal information regarding the participants. After being informed about the purpose of the study and their right to quit the survey, the participants agreed to participate. They were provided with the option, "I don't want to respond", for questions. Completion of the entire questionnaire was considered to indicate the participants' consent.

Data Availability Statement: The data presented in this study are available upon request from the corresponding author.

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Notes

1 After entering junior high school, circumstance generally changes. Junior high school students more likely to join school sports club than local sports club.

2 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 on 5 April 2018).

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