

Worldviews and Intergenerational Altruism

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Abstract

This paper presents empirical evidence concerning worldviews and intergenerational altruism from unique U.S. and Japanese survey data. These data sets have been collected by Osaka University, and contain questions concerning worldviews and religions, hypothetical questions about parental behavior, and questions about socioeconomic variables. Our empirical evidence indicates that people who are confident about issues related to worldviews tend to show tough love attitudes toward their children. Our evidence also suggests that worldviews and religions affect tough love and spoiling love attitudes.

Key Words: Intergenerational Altruism, Tough Love, Worldviews, Religion

1 Introduction

This paper presents empirical evidence concerning worldviews, religion, and intergenerational altruism from unique U.S. and Japanese survey data collected by the Osaka University Center of Excellence (COE) program. These data contain questions concerning worldviews and religions and hypothetical questions about parental behavior as well as socioeconomic variables.

How different generations are connected is an important economic issue with implications for individual economic behavior like savings, investment in human and physical capital and bequests which in turn affect aggregate savings and growth. It also has nontrivial policy implications as in Barro (1974), who has found that there will be no net wealth effect of a change in government debt in the standard altruism model. Infinite horizon dynamic macro models are typically based on the standard altruism model proposed by Barro (1974) and Becker (1974) in which the current generation derives

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utility from its own consumption and the utility level attainable by its descendant.

Barro and Becker's standard altruism model does not predict parents' discipline behavior in situations in which we expect parents in our real lives to discipline their children. For example, a striking implication of the standard altruism model is that when the child becomes impatient, transfers from the parent to the child do not change when the child is borrowing constrained as Bhatt and Ogaki (2008, section III) showed. This implication of the model is not consistent with recent empirical evidence on pecuniary and non-pecuniary parental punishments (see Weinberg (2001), Hao, Hotz, and Jin (2008), and Bhatt (2008) for empirical evidence). For example, imagine that a child befriends a group of impatient children and suddenly becomes impatient because of their influence. As a result the child starts to spend more time playing with the new friends and less time studying. In worse cases, the child starts to smoke, drink, or consume illegal drugs (see Ida and Goto (2009) for empirical evidence that shows association of low discount factor and smoking). At least some parents are likely to respond by pecuniary punishments such as lowering allowances or non-pecuniary punishments such as grounding.

Bhatt and Ogaki modified the standard model to develop the tough love model of intergenerational altruism, so that it implies that the parent lowers transfers to the child when the child exogenously becomes impatient under a wide range of reasonable parameters. They modeled parental tough love by combining the two ideas that have been studied in the literature in various contexts. First, the child's discount factor is endogenously determined, so that low consumption at young age leads to a higher discount factor later in her life. This was based on the endogenous discount factor models of Uzawa (1968) except that the change in the discount factor is immediate in Uzawa's formulation whereas a spoiled child with high consumption progressively grows to become impatient in our formulation. Recent theoretical models that adopt the Uzawa-type formulation include Schmitt-Grohé and Uribe (2003) and Choi, Mark, and Sul (2008). Second, the parent evaluates the child's lifetime utility function with a constant discount factor that is higher than that of the child. Since the parent is the social planner in our simple model, this feature is related to recent models (see Caplin and Leahy (2004); Sleet and Yeltekin (2005), (2007); Phelan (2006), and Farhi and Werning (2007)) in which the discount factor of the social planner is higher than that of the agents.

Akabayashi's (2006) model is similar to the tough love model in the sense that the child has an endogenous discounting and the parent evaluates his life time utility with a discount factor that is different from the child's. The main difference is that it employs Becker and Mulligan's (1997) endogenous discounting model in which accumulating human capital makes the child more patient and there exists an asymmetric information between the parent and the child. In this model, it is possible that the parent abuses the child in the sense that the parent keeps on punishing the child for his bad performance even though the child is simply not talented enough to perform better. Just as in Bhatt and Ogaki's model, Akabayashi's model predicts that the parent's discount factor that is used to evaluate the child's life time utility affects the parent's discipline behavior.

In a companion paper, Horioka, Kamesaka, Kubota, Ogaki, and Ohtake (2010), we sought to examine whether or not parents' discount factors affect their attitude toward their children as predicted by these models. In that paper, we used the Osaka University Global COE survey data for Japan and the United States, which continued the survey data we use in the present paper. The main question we asked in the companion paper was how parents' tendencies for tough love behavior depend on various measures of time discounting for parents' own lending and borrowing over different time horizons. We found evidence that is consistent with the tough love model. We also found that parents with debt aversion tend to show tough love. One empirical puzzle we found was that proportionately more U.S. parents show tough love to young children before the school age was higher than Japanese parents even after controlling for time discounting, debt aversion, and other economic and demographic factors. However, the variables relating to religions and worldviews were not included in our analyses in the companion paper.

One possible explanation for this puzzle is differences in religions and worldviews in the two countries. There are many Buddhists in Japan while there are many Christians in the United States. Buddhism emphasizes deliverance from suffering. This emphasis is consistent with a worldview that suffering does not have a positive meaning such as personal development. This is very different from the Christian worldview in which all knowing, almighty God allowed His only Son to suffer on the cross for the purpose of saving the world. Christians often conclude that their own suffering and other people's suffering were allowed by God for a purpose such as personal development. When a parent feels that it is better in the long run to disci-

pline a child, he is often tempted not to do that because he does not want to see her suffer now. A person with the Christian worldview may find it easier to fight against such temptation than a person with the Buddhist worldview.

In the present paper, we seek to examine whether or not and how religions and worldviews of parents affect their attitude toward their children. We use the Osaka University COE survey data for Japan and the United States, which include two hypothetical questions concerning tough love behavior. In the companion paper, we used answers to both of these questions as dependent variables in our regressions. In this paper, we are using one of these questions for which we found more important international differences in the companion paper. The main question we ask is how parents' tendencies for tough love behavior depend on various measures of worldview beliefs, religious affiliations, and religiosity.

Tough Love Altruism

This section presents a tough love altruism model that provides for a channel through which parents can influence the child's economic behavior. The model introduces the tough love motive of the parent via asymmetric time preferences between generations and endogenous discounting. This model predicts that the transfer to the child in period 1 will decrease when the child's discount factor exogenously decreases for a wide range of parameters. We use this model to interpret our empirical results. This model is used to motivate our empirical work and gives a framework to interpret some aspects of our empirical results.

Imagine a three-period model economy with two agents, the parent and the child. For simplicity we consider the case of a single parent and a single child. The three periods considered are childhood, work and retirement. The model has six features. First, the parent cares about his own consumption but is also altruistic toward the child. He assigns a weight of η to his own utility where $0 < \eta < 1$. The child on the other hand is a non-altruist and derives utility only from her own consumption stream $\{C_t\}_{t=1}^3$. Second, the life of the parent and the child overlap only in period 1. Third, transfers, T , are made only in period 1.⁶ Fourth, income of both the parent and the child is given exogenously. Fifth, the child is borrowing constrained in period 1. Lastly, there is no uncertainty in the economy. We will consider and compare

⁶We assume that transfers are made from the parent to the child and there are no reverse transfers.

four models in this economy.

In this model, the parent uses a constant and high discount factor to evaluate the child's lifetime utility while the child herself uses a discount factor which is endogenously determined as a decreasing function of her period 1 consumption:

$$\beta_{t,k}(C_1) \quad ; \quad \frac{\partial \beta_{t,k}}{\partial C_1} < 0.$$

With the borrowing constraint faced by the child in period 1, her discount factor is given by $\beta_{t,k}(y_1 + T)$.

The underlying motivation for this type of endogeneity of the child's discount factor is the belief that the parent can spoil the child by giving her very high consumption during childhood, so that the child will grow to be a relatively impatient person. This in turn is motivated by the empirical evidence and evidence in the child psychology literature discussed in Bhatt and Ogaki (2008).

Now, the parent optimizes by solving the following optimization problem,

$$\begin{aligned} \max_T \quad & \left[\eta v(y_p - T) + (1 - \eta) \left[u(y_1 + T) + \beta_{2,p} u(C_2^*) \right. \right. \\ & \left. \left. + \beta_{2,p} \beta_{3,p} u(R(y_2 - C_2^*)) \right] \right], \end{aligned} \quad (1)$$

subject to

$$\{C_2^*\} \equiv \arg \max_{C_2} \left[u(C_2) + \beta_{3,k}(y_1 + T) u(R(y_2 - C_2)) \right]. \quad (2)$$

In this tough love model there is no closed form solution to the parent's problem for any functional form for the utility function. Bhatt and Ogaki reports simulation results. When the discount factor that is used by the parent to evaluate the child's life time utility is higher than the discount factor of the child for the second and third periods, the parent decreases the transfer to the child in response to an exogenous drop in the child's discount factor,

the parent decreases the transfer to the child for a wide range of parameter values. The intuition is that the parent prefers the child's consumption to grow at a faster rate (or drop at a slower rate) in this situation. This gives the parent a tough love incentive to decrease the transfer, so that the child will grow to be more patient. This incentive intensifies when the child's discount factor exogenously drops.

2 Data

The analyses in this paper are based on data from two questionnaire surveys: (1)Osaka University 21st Century Center of Excellence Program entitled "Preference and Life Satisfaction Survey" conducted in Japan(PLiSS-JAP); and the same survey conducted in the US (PLiSS-US).

A brief description of each survey follows. PLiSS-US and PLiSS-JAP is a panel study, which started in February 2004 as part of the Osaka University 21st Century Center of Excellence Program. PLiSS-JAP has been conducted annually since 2004 using a random sample drawn from 6,000 individuals by a placement@(self-administered) method. A new sample of 2,000 people which were traced was added to the 2006 survey. The 2008 survey also added a new sample of 3,000 people by mailing method. This research will use only the 2008 survey data because the cross-sectional sample size is the largest since 2004 in the PLiSS-JAP that contain worldview questions. The number of respondents was 3,975.

We use answers to the following "Fever" question in order to construct the dependent variables of our regression analyses in this paper.

The Fever Question: Imagine that you have a 5-year old child that has a high fever and is in pain. The child's doctor tells you that both the fever and pain are harmless. He can give you a medicine that cures the sickness but slightly weakens the child's immune system when the child becomes 50 years old. What would you do? (X ONE Box)

1 I would give the medicine to the child if the sickness is known to last for one day.

2 I would give the medicine to the child if the sickness is known to last for two days.

3 I would give the medicine to the child if the sickness is known to last for one week.

4 I would give the medicine to the child if the sickness is known to last for one month.

5 I would not give the medicine to the child.

We report the distributions of answers to the "Fever" question in Figure 1, and their descriptive statistics in Table 1. For the "Fever" question, we interpret Answers 1-4 as parents' behaviors motivated by spoiling love with tougher love indicated by a higher numbered answer and Answer 5 as parents' behaviors motivated by tough love. With these interpretations, we conclude that 54.4% of American parents show tough love, while only 34.4% of Japanese parents show tough love to a 5-year old child. This result is not surprising given casual observations relatively little discipline children receive in Japan in their pre-school ages compared with children in the United States: it is relatively more often in Japan than in the United States to find pre-school children running around in grocery stores while their parents do not do anything, for example.

We think that most parents are tempted to give the medicine in the situation of the question even if they think that it is better not to give the medicine. A parent needs to have a strong conviction about his decision not to give the medicine if he is to fight against the temptation for one month. So we think that a type of a person who tends to have strong conviction is more likely to choose Answer 5. We constructed a variable called "Confidence" to identify this type. In order to construct the variable, we give points to answers to certain questions. We gave one point to either Answer 1 "You totally disagree to it." or Answer 5 "You totally agree to it." for each of the following statements: "I will never be robbed," "Spirits and Ghosts exist," "What is written in science text books is true," "Heaven exists," and "A person's blood type indicates their character." We gave one point to either Answer 1 "It doesn't hold true at all for you," and Answer 5 "It is particularly true for you for each of the following statements: "I always keep my promise," "I know a lot about politics," and "I have a good memory."

We report the distributions of the "Confidence" variable in the United States and Japan in Figure 2, and its descriptive statistics in Table 1. Figure 2 shows that the fraction of the U.S. people who scores 0 point for this variable is about 8%, the fraction of the people peaks for 2 and 3 points at the level of about 21%, and then the fraction gradually declines with the fraction of 1% people scoring the full 8 points. The fraction of the Japanese people who scores 0 point for this variable is about 37%, and it gradually

declines to about 1%. This variable shows a sharp cultural difference in the two countries.

Table 1 reports descriptive statistics of answers for questions related to worldviews and religions. Appendix 1 lists these questions that were common to both countries.⁷ Appendix 2 explains religious affiliation questions used in each of these two countries. Because there are many more Protestant Christians in the United States than in Japan, the U.S. survey asked more detailed denomination affiliation questions within the category while the Japanese survey combined all Protestant denominations in one category. Scientology was an option to the question only in the U.S. survey because there has virtually been no one affiliated with Scientology in Japan. In our analysis, for each of these variables, we constructed the "Yes" dummy by assigning the value of 1 to Answers 4 and 5 and zero otherwise. We also constructed the "No" dummy by assigning the value of 1 to Answers 1 and 2 and zero otherwise.

If we assume that parents with higher discount factors for their own financial decisions use their higher discount factors to evaluate their children's life time utilities, then the tough love model predicts tougher parental behaviors toward their children for parents with higher discount factors for their own financial decisions. To test this hypothesis, we need data for parents' patience. PLiSS-US and PLiSS-JAP contains the questions about patience of respondents. We use the hypothetical questions to ask the attitude of intertemporal choices of receiving cash. There are 5 different questions in this type. These questions are for different settings about the timing of receiving (or paying) cash and the amount of receiving (or paying) cash and are in Appendix 3.

We call the first of these five questions the "Impatience(1)" question. The question starts with "Let's assume you have two options to receive some money. You may choose Option "A", to receive \$100 in two days; or Option "B", to receive a different amount in nine days. Compare the amounts and timing in Option "A" with Option "B" and indicate which amount you would prefer to receive for all 8 choices." Then it lists a table of 8 choices for the two options and the corresponding interest rate for each choice (see Appendix 1 for more complete descriptions of these five questions.) Option B ranges from

⁷For the purpose of clearer presentation, we reversed the ordering of the answers. In the original questions, Answer 1 was "You totally agree to it" or "It is particularly true for you."

\$99.81 to \$105.74. These eight options correspond with the annual interest rates of -10%, 0%, 10%, 20%, 50%, 100%, 200%, and 300%, respectively. The "Impatience(2)" question starts with "Now let's assume that you have the option to receive \$100 in ninety days or receive a different amount in ninety-seven days." For this question, the eight choices of Option B and the corresponding interest rates are the same at the "Impatience(1)" question. The "Impatience(3)" question starts with "Now let's assume that you have the option to receive \$100 in one month or receive a different amount in thirteen months." For this question, Option B ranges from \$95 to \$140. These eight choices correspond with the annual interest rates of -5%, 0%, 2%, 4%, 6%, 10%, 20%, and 40%. The "Impatience(4)" question starts with "Now let's assume that you have the option to receive \$10,000 in one month or receive a different amount in thirteen months." For this question, Option B ranges from \$9,500 to \$11,000. These eight choices correspond with the annual interest rates of -5%, 0%, 0.1%, 0.5%, 1%, 2%, 6%, and 10%. The "Impatience(5)" question starts with "Now let's assume that you have the option to receive \$10,000 in one month or pay a different amount in thirteen months." For this question, Option B ranges from \$9,500 to \$11,000. These eight choices correspond with the annual interest rates of -5%, 0%, 0.1%, 0.5%, 1%, 2%, 6%, and 10%.

Thus the "Impatience(1)" question is about discounting between two days later and nine days later. The "Impatience(2)" question is about discounting between ninety days later and ninety-seven days later. The "Impatience(3)" question is about discounting between one month later and thirteen months later for \$100. The "Impatience(4)" question is about discounting between the same time points in time, but for \$10,000. The "Impatience(5)" question is about discounting between the same time points in time for \$10,000 as the "impatience(4)" question, but is for paying rather than receiving.

We report these five patience proxies, which are calculated from the expected values of the range of designated in the questions. The calculation procedure is described in Appendix 4. For our regression analyses, we used a standardized mean of the first four patience proxies called "Impatience(1)", "Impatience(2)", "Impatience(3)", and "Impatience(4)" as our measure of patience. We took the mean to mitigate the measurement error problem. We used the difference between "Impatience(5)" and "Impatience(4)" as a measure of debt aversion. The descriptive statistics of these patience proxies are summarized in Table 1.

Table 1 also reports descriptive statistics for the socioeconomic variables,

which are respondent's sex, age, race (only in the U.S. survey), education years, having children dummy, log of household's income, and log of household's financial asset. The questions about income and asset are in Appendix 3.

3 Empirical Results

We estimate the probit model because the dependent variables from the "Fever" question are discrete choice variables. The independent variables are religious and worldview variables, patience proxy variables, and socio-economic variables. The results are presented in Tables 2-4 that report the marginal effects.

Tables 2 and 3 report the results when we we construct the dependent variable by setting it to be 1 if Answer 5 is chosen and 0 otherwise for the "Fever" question. Here we are using our interpretation that Answer 5 indicates the tough love attitude as discussed in the last section. Table 2 is for the U.S. data, and Table 3 is for the Japanese data. In all regressions, we include the impatience and the debt aversion measures that were found to have statistically significant effects in the companion paper as well as socio economic variables such as the male dummy, age, education years, having children dummy, and log of household income. Also included in all regressions is the "Confidence" variable explained in the last section. In addition to these variables, we added dummy variables for one of the seven categories related to worldviews and religions in each of the seven regressions.

First, we focus our discussion on the marginal effects of the "Confidence" variable. In all regressions for both countries, the sign of the coefficient for the "Confidence" variable is positive and the coefficient is statistically significant at least at the 5% level. If the parent is of the confident type, he tends to show the tough love attitude. Even if a parent judges that being tough on the child is good for the child in the long run, it is tempting to be soft in the short run. A parent who is confident in his judgment can more easily resist this temptation. This confidence, however, may turn out to be overconfidence in some cases as we discussed above. So being tough because the parent is of the confident type may or may not be good for the child in the long run. Our focus in this paper is the effect of the type on the discipline behavior rather than on judging whether or not being tough is good for the child.

Second, we focus on the marginal effect of the religious and worldview variables. We have seven regression models, depending on which of these variables were included. In Table 2 for the United States, the only dummy variable whose coefficient is significant at the conventional levels is that for non-Christian religion. This variable is the product of the dummy variable for the religious affiliation with a non-Christian religion and the dummy variable for being deeply religious. It takes the value of one only if the person belongs to a non-Christian religion and deeply religious and the value of zero otherwise. About 8% of the respondents belong to a non-Christian religion. Most of them chose Answer 16 "Some other affiliation not listed above," and do not belong to Buddhism, Hinduism, Islam, Judaism, nor Scientology. About 5% of the respondents is deeply religious and also belongs to a non-Christian religion.

In Table 3 for Japan, coefficients for a few variables are significant at least at the 10% level. People who belong to Buddhism and are deeply religious are less likely to have a tough love attitude. This is consistent with our discussion in the Introduction that it is more difficult for a parent to resist the temptation to remove suffering in the short-run in the Buddhism worldview. For the worldview questions, the marginal effect of no dummy for the question whether or not the life after death exists is significantly positive at the 10% level, and that of the no dummy for the question whether or not God or gods exist is significantly positive at the 5% level. These effects may reflect the effect of the Buddhism worldview. The marginal effect of both yes and no dummy for the question whether or not human beings evolved from other living things are positive at the 5% level. Since both dummies are significant, it seems that this is a result of being the confident type. The confidence variable is included in the same regression as these dummy variables, and so we think that the confidence variable failed to capture the whole effect of being the "confident" type, and these dummy variables are picking up some of the remaining effects.

Third, as for the effects of the impatience and debt aversion variables, our results in this paper are similar to those we obtained in the companion paper. So we refer the reader to the discussion in the companion paper. It should be noted that the results for the impatience variable is consistent with the tough love model.

Finally, we now turn to the marginal effects of other control variables. Older parents are more likely to have tough love attitude in the United States. Male parents and people without children are more likely to have

tough love attitudes in Japan.

Tables 4 and 5 report the results when we we construct the dependent variable by setting it to be 5 if Answer 5 is chosen and 0 otherwise for the "Fever" question. Here we use our interpretation that Answer 1 indicates a strongly spoiling attitude as discussed in the last section. Table 4 is for the U.S. data, and Table 5 is for the Japanese data. In all regressions, we include the impatience and the debt aversion measures that were found to have statistically significant effects in the companion paper as well as socio economic variables such as the male dummy, age, education years, having children dummy, and log of household income. Also included in all regressions is the "Confidence" variable explained in the last section. In addition to these variables, we added dummy variables for one of the seven categories related to worldviews and religions in each of the seven regressions.

First, we focus our discussion on the marginal effects of the "Confidence" variable. In all regressions for the U.S. data, the marginal effect is insignificant at the conventional levels. In all regressions for the Japanese data, the sign of the coefficient for the "Confidence" variable is positive and the coefficient is statistically significant at the 5% level. If the parent is of the confident type, he tends to show both strongly spoiling and tough love attitudes in Japan. There are several possible explanations for this, but we need to analyze the data more to see which ones are more plausible.

Second, we focus on the marginal effect of the religious and worldview variables. We have seven regression models, depending on which of these variables were included as in Tables 2 and 3. In Table 4 for the United States, the effect of the product of the deeply religious dummy and the affiliation to a non-Christian religion is negative at the 10% level. When we break down Christian denominations, then the effects of Protestant and Catholic also become significant at the 10% level. Fro these two denominations, the results are consistent with our discussion in the Introcution for the Christian worldview. Both yes and dummy variables for the question whether or not the respondent is deeply religious have significantly negative effects. At the 5 % level, only the yes dummy is significatn. If we focus on the yes dummy for this reason, then deeply religous people tend not to show stronlgy spoiling attitude. In Table 5 for Japan, no coefficint for the variables in this category are significant at the conventional levels.

Third, we now turn to the marginal effects of other control variables. Non-whites, people with less education years, and those with less income are more likely to have strongly spoiling love attitude in the United States. Male

parents, older people, people with less education years, and those with less income are more likely to have strongly spoiling love attitudes in Japan.

4 Concluding Remarks

Our empirical evidence indicates that people who are confident about issues related to worldviews tend to show tough love attitudes toward their children. Our evidence also suggests that worldviews and religions affect tough love and spoiling love attitudes.

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Appendix 1: Questions about “Worldview” and “Confidence” Variables

Do you agree with the following ideas? If "you totally agree to it", you would choose "1", and if "you totally disagree to it", you would choose "5". Of course, you may choose any number in between.

	You Totally Disagree To It	←		→	You Totally Agree To It
Life after death exists	1	2	3	4	5
God or Gods exist	1	2	3	4	5
God knows about all the wrong we've done	1	2	3	4	5
Human beings evolved from other living things	1	2	3	4	5
I will never be robbed	1	2	3	4	5
Spirits and Ghosts exist	1	2	3	4	5
What is written in science text books is true	1	2	3	4	5
Heaven exists	1	2	3	4	5
A person's blood type indicates their character	1	2	3	4	5

Do the following statements hold true for you? If “it is particularly true for you”, you would choose “5”, and if “it doesn't hold true at all for you”, you would choose “1”. Of course, you may choose any number in between.

	It Doesn't Hold True At All For You	←		→	It Is Particularly True For You
I am deeply religious	1	2	3	4	5
I always keep my promise	1	2	3	4	5

I know a lot about politics	1	2	3	4	5
I have a good memory	1	2	3	4	5

Appendix 2: Questions about Religious Affiliations

Please indicate if you are affiliated with any of the following religions.

Options in United States

1. Baptist	7. Other Protestant	13. Islam
2. Episcopalian	8. Roman Catholic	14. Judaism
3. Evangelical	9. Orthodox Christian	15. Scientology
4. Lutheran	10. Other Christian	16. Some other affiliation not listed above
5. Presbyterian	11. Buddhism	17. None
6. United Methodist	12. Hinduism	18. Prefer not to answer

Options in Japan

1. None	4. Other Christian	7. Hinduism
2. Catholic	5. Judaism	8. Buddhism
3. Protestant	6. Islam	9. Otherwise

Appendix 3: Questions about Patience and Income

Appendix 1

Household income

Approximately how much was the annual earned income before taxes and with bonuses included of your entire household for 2007? *(If you are student, please answer the income of your parents' entire household.)*

(X ONE Box)

- | | |
|--|--|
| <input type="radio"/> ₀₁ Y Less than \$10,000 | <input type="radio"/> ₀₇ Y \$100,000 to less than \$120,000 |
| <input type="radio"/> ₀₂ Y \$10,000 to less than \$20,000 | <input type="radio"/> ₀₈ Y \$120,000 to less than \$140,000 |
| <input type="radio"/> ₀₃ Y \$20,000 to less than \$40,000 | <input type="radio"/> ₀₉ Y \$140,000 to less than \$160,000 |

- 04 Y \$40,000 to less than \$60,000 10 Y \$160,000 to less than \$180,000
 05 Y \$60,000 to less than \$80,000 11 Y \$180,000 to less than \$200,000
 06 Y \$80,000 to less than \$100,000 12 Y More than \$200,000

Household financial asset

Approximately how much would the balance of financial assets (savings, stocks and insurance, etc.) of your entire household be? (If you are a student, please answer the balance of financial assets of your parents' entire household.) (X ONE Box)

- 01 Y Less than \$25,000 06 Y \$150,000 to less than \$200,000
 02 Y \$25,000 to less than \$50,000 07 Y \$200,000 to less than \$300,000
 03 Y \$50,000 to less than \$75,000 08 Y \$300,000 to less than \$500,000
 04 Y \$75,000 to less than \$100,000 09 Y \$500,000 to less than \$1,000,000
 05 Y \$100,000 to less than \$150,000 10 Y \$1,000,000 or more

Impatience(1)

Let's assume you have **two options** to receive some money. You may choose Option "A", to receive \$100 in **two days**; or Option "B", to receive a different amount in **nine days**. Compare the **amounts** and **timing** in Option "A" with Option "B" and indicate which amount you would prefer to receive for all 8 choices.

Option "A"	or	Option "B"	Includes An Annual Interest Rate Of:	→	Which ONE do you prefer? (X ONE Box For EACH Row)	
Receiving In 2 Days		Receiving In 9 Days			Option "A"	Option "B"
\$100.00		\$99.81	-10%.....		1 Y	2 Y
\$100.00		\$100.00	0%.....		1 Y	2 Y
\$100.00		\$100.19	10%.....		1 Y	2 Y
\$100.00		\$100.38	20%.....		1 Y	2 Y
\$100.00		\$100.96	50%.....		1 Y	2 Y
\$100.00		\$101.91	100%.....		1 Y	2 Y
\$100.00		\$103.83	200%.....		1 Y	2 Y
\$100.00		\$105.74	300%.....		1 Y	2 Y

Impatience(2)

Now let's assume that you have the option to receive \$100 in **ninety days** or receive a different amount in **ninety-seven days**. Compare the **amounts** and **timing** in Option "A" with Option "B" and indicate which amount you would prefer to receive for all 8 choices.

Option "A"	Option "B"	Includes	Which ONE do you prefer?
------------	------------	----------	--------------------------

Receiving In 90 Days	or	Receiving In 97 Days	An Annual Interest Rate Of:	(X ONE Box For EACH Row)	
				Option "A"	Option "B"
\$100.00		\$99.81	-10%.....	1 Y	2 Y
\$100.00		\$100.00	0%.....	1 Y	2 Y
\$100.00		\$100.19	10%.....	1 Y	2 Y
\$100.00		\$100.38	20%.....	1 Y	2 Y
\$100.00		\$100.96	50%.....	1 Y	2 Y
\$100.00		\$101.91	100%.....	1 Y	2 Y
\$100.00		\$103.83	200%.....	1 Y	2 Y
\$100.00		\$105.74	300%.....	1 Y	2 Y

Impatience(3)

Now let's assume that you have the option to receive \$100 in **one month** or receive a different amount in **thirteen months**. Compare the **amounts** and **timing** in Option "A" with Option "B" and indicate which amount you would prefer to receive for all 8 choices.

Option "A"		or	Option "B"		Includes An Annual Interest Rate Of:	→	Which ONE do you prefer? (X ONE Box For EACH Row)	
Receiving In 1 Month			Receiving In 13 Months				Option "A"	Option "B"
\$100		\$95		-5%.....		1 Y	2 Y	
\$100		\$100		0%.....		1 Y	2 Y	
\$100		\$102		2%.....		1 Y	2 Y	
\$100		\$104		4%.....		1 Y	2 Y	
\$100		\$106		6%.....		1 Y	2 Y	
\$100		\$110		10%.....		1 Y	2 Y	
\$100		\$120		20%.....		1 Y	2 Y	
\$100		\$140		40%.....		1 Y	2 Y	

Impatience(4)

Now let's assume that you have the option to receive \$10,000 in **one month** or receive a different amount in **thirteen months**. Compare the **amounts** and **timing** in Option "A" with Option "B" and indicate which amount you would prefer to receive for all 8 choices.

Option "A"		or	Option "B"		Includes An Annual Interest Rate Of:	→	Which ONE do you prefer? (X ONE Box For EACH Row)	
Receiving In 1 Month			Receiving In 13 Months				Option "A"	Option "B"
\$10,000		\$9,500		-5%.....		1 Y	2 Y	
\$10,000		\$10,000		0%.....		1 Y	2 Y	
\$10,000		\$10,010		0.1%.....		1 Y	2 Y	
\$10,000		\$10,050		0.5%.....		1 Y	2 Y	
\$10,000		\$10,100		1%.....		1 Y	2 Y	
\$10,000		\$10,200		2%.....		1 Y	2 Y	

\$10,000	\$10,600	6%.....	1 Y	2 Y
\$10,000	\$11,000	10%.....	1 Y	2 Y

Impatience(5)

Now let's assume that you have the option to **pay** \$10,000 in **one month** or **pay** a different amount in **thirteen months**. Compare the **amounts** and **timing** in Option "A" with Option "B" and indicate which amount you would prefer to **pay** for all 8 choices.

Option "A"		or	Option "B"		Includes An Annual Interest Rate Of:	→	Which ONE do you prefer? (X ONE Box For EACH Row)	
Paying In 1 Month			Paying In 13 Months				Option "A"	Option "B"
\$10,000			\$9,500		-5%.....	1 Y	2 Y	
\$10,000			\$10,000		0%.....	1 Y	2 Y	
\$10,000			\$10,010		0.1%.....	1 Y	2 Y	
\$10,000			\$10,050		0.5%.....	1 Y	2 Y	
\$10,000			\$10,100		1%.....	1 Y	2 Y	
\$10,000			\$10,200		2%.....	1 Y	2 Y	
\$10,000			\$10,600		6%.....	1 Y	2 Y	
\$10,000			\$11,000		10%.....	1 Y	2 Y	

Appendix 4: Construction of the Patience Variables

The patience variables, "patience(1)", ..., "patience(5)" are estimated through the following procedure. In the questionnaires, a respondent was supposed to choose appropriate range containing the corresponding amount of receiving cash, instead of writing down the exact figures. Using that information, the expected value of each classification will be estimated as follows.

First, assume that each of those income variables, θ , follow the log-normal distribution, or

$$x \equiv \ln\theta \sim N(\mu, \sigma)$$

where μ and σ denote the mean and standard deviation of the normal distribution respectively. When there are J classes ($c = 1, \dots, J$), the probability for θ of individual

i, $x_i = \ln\theta_i$ i to be jth class can be expressed as:

in jth class can be expressed as:

$$P(c = j) = P(\ln\underline{\theta}_j < x_i < \ln\bar{\theta}_j) = \Phi\left(\frac{\ln\bar{\theta}_j - \mu}{\sigma}\right) - \Phi\left(\frac{\ln\underline{\theta}_j - \mu}{\sigma}\right),$$

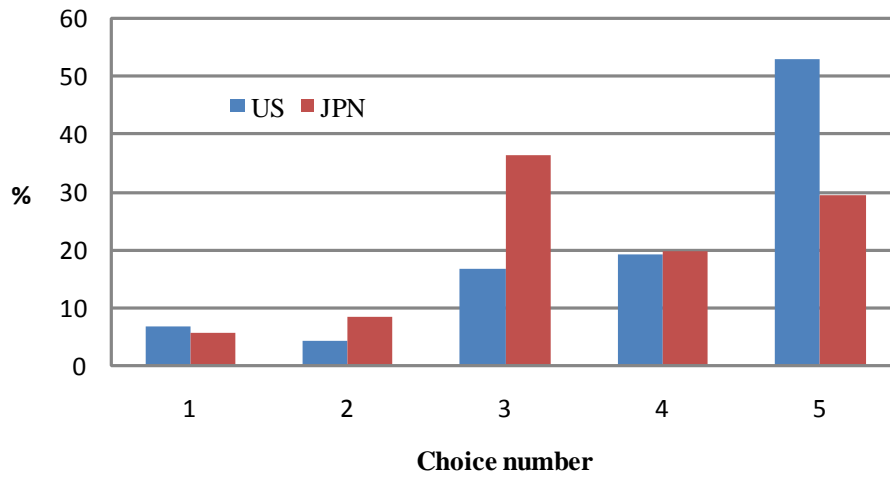
where $\bar{\theta}_j$ and $\underline{\theta}_j$ means the upper and lower bounds of θ respectively in the Jth class, printed in the questionnaires. The mark Φ , in addition, denotes the cumulative distribution function of the normal distribution. The logarithm of the above probability with respect to every respondent will constitute a log-likelihood function defined as:

$$L(\mu, \sigma|c) = \sum_{i \in I} \sum_{j \in J} 1[c_i = j] \ln P(c = j)$$

Let $1[c_i = j]$ signifies the variable to take one for the inclusion of individual i in class j ; otherwise, it equals zero. The letter I and J indicate the total number of respondents and classes respectively. Employing the parameter μ and σ through the maximum likelihood estimation with the log-likelihood function, each expected value of θ in J can be calculated with the following equation (Kimball et al., 2005).

$$E(\theta_i | \ln\underline{\theta}_j < x_i < \ln\bar{\theta}_j) = \exp\left(\mu + \frac{\sigma^2}{2}\right) \frac{\int_{\ln\underline{\theta}_j}^{\ln\bar{\theta}_j} \frac{1}{\sqrt{2\pi\sigma}} \exp\left(\frac{-(y - \mu - \sigma^2)^2}{2\sigma^2}\right) dy}{\int_{\ln\underline{\theta}_j}^{\ln\bar{\theta}_j} \frac{1}{\sqrt{2\pi\sigma}} \exp\left(\frac{-(y - \mu)^2}{2\sigma^2}\right) dy}.$$

Figure 1. Distribution of the "Fever" Variable



Note:

The choice number indicates the following:

1. I would give the medicine to the child if the sickness is known to last for one day.
2. I would give the medicine to the child if the sickness is known to last for two days.
3. I would give the medicine to the child if the sickness is known to last for one week.
4. I would give the medicine to the child if the sickness is known to last for one month.
5. I would not give the medicine to the child.

Figure 2. Distribution of the "Confidence" Variable

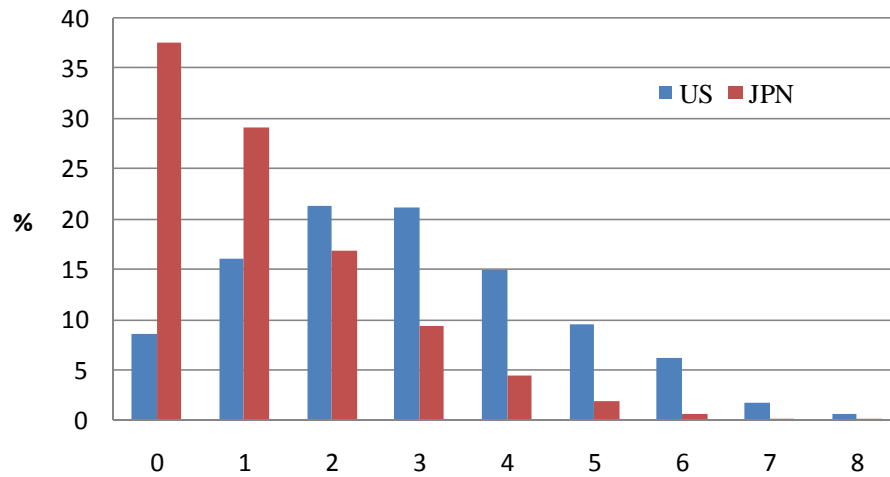


Table 1. Descriptive Statistics

	Mean	S.D.	Min	Max	Mean	S.D.	Min	Max
	Panel A. US(N=1474)				Panel B. JPN(N=2457)			
Fever								
choice 1. dummy	0.07	0.25	0.00	1.00	0.06	0.23	0.00	1.00
choice 2. dummy	0.04	0.21	0.00	1.00	0.09	0.28	0.00	1.00
choice 3. dummy	0.17	0.37	0.00	1.00	0.36	0.48	0.00	1.00
choice 4. dummy	0.19	0.39	0.00	1.00	0.20	0.40	0.00	1.00
choice 5. dummy	0.53	0.50	0.00	1.00	0.30	0.46	0.00	1.00
Worldview								
Life after death exists								
Yes dummy	0.62	0.49	0.00	1.00	0.30	0.46	0.00	1.00
No dummy	0.13	0.34	0.00	1.00	0.29	0.45	0.00	1.00
God or Gods exists								
Yes dummy	0.79	0.41	0.00	1.00	0.40	0.49	0.00	1.00
No dummy	0.08	0.26	0.00	1.00	0.21	0.41	0.00	1.00
God knows about all the wrong we've done								
Yes dummy	0.71	0.45	0.00	1.00	0.38	0.48	0.00	1.00
No dummy	0.11	0.31	0.00	1.00	0.24	0.43	0.00	1.00
Human beings evolved from other living things								
Yes dummy	0.39	0.49	0.00	1.00	0.57	0.49	0.00	1.00
No dummy	0.39	0.49	0.00	1.00	0.10	0.30	0.00	1.00
I am deeply religious								
Yes dummy	0.36	0.48	0.00	1.00	0.08	0.26	0.00	1.00
No dummy	0.41	0.49	0.00	1.00	0.79	0.40	0.00	1.00
Religions								
Christian × Deeply religious dummy	0.32	0.47	0.00	1.00	0.01	0.09	0.00	1.00
Protestant × Deeply religious dummy	0.15	0.36	0.00	1.00				
Catholic × Deeply religious dummy	0.12	0.32	0.00	1.00				
Other Christian × Deeply religious dummy	0.05	0.22	0.00	1.00				
Buddhism × Deeply religious dummy					0.04	0.20	0.00	1.00
Otherwise × Deeply religious dummy	0.04	0.18	0.00	1.00	0.02	0.13	0.00	1.00
Confidence								
I will never be robbed	2.83	1.76	0.00	8.00	1.23	1.34	0.00	8.00
I always keep my promise	2.59	1.07	1.00	5.00	3.04	0.90	1.00	5.00
I always keep my promise	2.56	1.15	1.00	5.00	4.03	0.69	1.00	5.00
I know a lot about politics	2.59	1.20	1.00	5.00	2.43	0.96	1.00	5.00
I have a good memory	2.57	1.16	1.00	5.00	2.99	0.97	1.00	5.00
Spirits and Ghost exist	3.08	1.35	1.00	5.00	2.92	1.14	1.00	5.00
What is written in science text books is true	2.94	1.03	1.00	5.00	3.46	0.72	1.00	5.00
Heaven exists	4.15	1.13	1.00	5.00	3.02	1.02	1.00	5.00
A person's blood type indicates their character	1.54	0.82	1.00	5.00	2.78	0.99	1.00	5.00
Impatience	0.06	0.83	-1.46	1.48	0.06	0.88	-1.51	1.99
Debt aversion	0.04	0.08	-0.20	0.20	0.03	0.05	-0.17	0.17
Respondent is male dummy	0.50	0.50	0.00	1.00	0.49	0.50	0.00	1.00
Respondent's age	45.92	15.90	18.00	88.00	49.52	13.08	20.00	75.00
Respondent's race	0.90	0.30	0.00	1.00				
non-white dummy	0.10	0.30	0.00	1.00				
Respondent's education years	14.04	2.62	9.00	21.00	13.34	2.15	9.00	21.00
Having children dummy	0.67	0.47	0.00	1.00	0.80	0.40	0.00	1.00
Log of household's income	6.23	0.89	3.91	7.82	6.33	0.66	3.87	7.78

Table 2. Tough Love Attitude (Answer 5) in United States

Dependent variable: Choice 5. in fever	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Life after death exists							
Yes dummy	-0.006 (0.032)						
No dummy	0.051 (0.045)						
God or Gods exists							
Yes dummy		-0.055 (0.040)					
No dummy		0.040 (0.060)					
God knows about all the wrong we've done							
Yes dummy			0.026 (0.036)				
No dummy			0.080 (0.050)				
Human beings evolved from other living things							
Yes dummy				-0.004 (0.036)			
No dummy				0.026 (0.036)			
I am deeply religious							
Yes dummy					0.016 (0.036)		
No dummy					0.032 (0.034)		
Religions							
Christian × Deeply religious dummy						-0.020 (0.029)	
Ohterwise × Deeply religious dummy						0.134 * (0.068)	0.133 * (0.069)
Protestant × Deeply religious dummy							-0.038 (0.039)
Catholic × Deeply religious dummy							0.014 (0.043)
Other Christian × Deeply religious dummy							-0.048 (0.061)
Confidence	0.019 ** (0.008)	0.020 *** (0.008)	0.018 ** (0.008)	0.018 ** (0.008)	0.019 ** (0.008)	0.019 ** (0.008)	0.019 ** (0.008)
Impatience	-0.048 ** (0.019)	-0.049 ** (0.019)	-0.048 ** (0.019)	-0.047 ** (0.019)	-0.048 ** (0.019)	-0.050 ** (0.019)	-0.049 ** (0.019)
Debt aversion	0.417 ** (0.203)	0.421 ** (0.203)	0.420 ** (0.203)	0.411 ** (0.203)	0.413 ** (0.203)	0.454 ** (0.205)	0.453 ** (0.205)
Male dummy	0.038 (0.027)	0.037 (0.027)	0.040 (0.027)	0.041 (0.027)	0.040 (0.027)	0.041 (0.027)	0.041 (0.027)
Age	0.003 *** (0.001)	0.003 *** (0.001)	0.003 *** (0.001)	0.003 *** (0.001)	0.003 *** (0.001)	0.003 *** (0.001)	0.003 *** (0.001)
Other white race dummy	0.037 (0.044)	0.042 (0.044)	0.038 (0.045)	0.034 (0.045)	0.039 (0.045)	0.029 (0.045)	0.033 (0.045)
Education years	0.007 (0.005)	0.006 (0.005)	0.006 (0.005)	0.007 (0.005)	0.006 (0.005)	0.006 (0.005)	0.006 (0.005)
Having children dummy	-0.019 (0.031)	-0.015 (0.031)	-0.019 (0.031)	-0.025 (0.031)	-0.021 (0.031)	-0.023 (0.031)	-0.023 (0.031)
Log of household's income	0.020 (0.016)	0.019 (0.016)	0.022 (0.016)	0.023 (0.016)	0.020 (0.016)	0.021 (0.016)	0.020 (0.016)
Observations	1474	1474	1474	1474	1474	1474	1474
Log likelihood	-1002	-1000	-1001	-1002	-1002	-1000	-999.8

Note:

1. This is estimated by probit model.

2. The estimation results are marginal effect.

3. Robust Standard errors are shown in the parentheses.

4. **, * and *** indicate the variables are significant at 10%, 5% and 1% significance level, respectively.

Table 3. Tough Love Attitude (Answer 5) in Japan

Dependent variable: Choice 5. in fever	(1)	(2)	(3)	(4)	(5)	(6)
Life after death exists						
Yes dummy	0.028 (0.023)					
No dummy	0.040 * (0.024)					
God or Gods exists						
Yes dummy		0.031 (0.021)				
No dummy		0.064 ** (0.027)				
God knows about all the wrong we've done						
Yes dummy			0.013 (0.022)			
No dummy			0.037 (0.026)			
Human beings evolved from other living things						
Yes dummy				0.049 ** (0.021)		
No dummy				0.091 ** (0.036)		
I am deeply religious						
Yes dummy					-0.020 (0.041)	
No dummy					-0.004 (0.028)	
Religions						
Christian × Deeply religious dummy						0.085 (0.112)
Buddhism × Deeply religious dummy						-0.100 ** (0.041)
Otherwise × Deeply religious dummy						0.0889 (0.073)
Confidence	0.016 ** (0.007)	0.014 ** (0.007)	0.017 ** (0.007)	0.017 ** (0.007)	0.020 *** (0.007)	0.018 *** (0.007)
Impatience	-0.037 ** (0.014)	-0.037 *** (0.014)	-0.037 *** (0.014)	-0.036 ** (0.014)	-0.036 ** (0.014)	-0.036 ** (0.014)
Debt aversion	0.666 ** (0.267)	0.663 ** (0.267)	0.669 ** (0.267)	0.678 ** (0.267)	0.660 ** (0.266)	0.646 ** (0.267)
Male dummy	0.034 * (0.019)	0.033 * (0.020)	0.034 * (0.020)	0.036 * (0.019)	0.036 * (0.019)	0.037 * (0.019)
Age	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
Education years	0.002 (0.005)	0.002 (0.005)	0.002 (0.005)	0.001 (0.005)	0.003 (0.005)	0.003 (0.005)
Having children dummy	-0.048 * (0.027)	-0.047 * (0.027)	-0.046 * (0.027)	-0.048 * (0.027)	-0.048 * (0.027)	-0.047 * (0.027)
Log of household's income	0.009 (0.015)	0.007 (0.015)	0.008 (0.015)	0.008 (0.015)	0.009 (0.015)	0.010 (0.015)
Observations	2457	2457	2457	2457	2457	2457
Log likelihood	-1478	-1476	-1478	-1475	-1479	-1475

Note:

1. This is estimated by probit model.

2. The estimation results are marginal effect.

3. Robust Standard errors are shown in the parentheses.

4. *, **, and *** indicate the variables are significant at 10%, 5% and 1% significance level, respectively.

Table 4. Strongly Spoiling Attitude (Ansewer 1) in Uniteed States

Dependent variable: Choice 1. in fever	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Life after death exists							
Yes dummy	-0.001 (0.013)						
No dummy	-0.025 (0.016)						
God or Gods exists							
Yes dummy		0.007 (0.017)					
No dummy		-0.030 (0.019)					
God knows about all the wrong we've done							
Yes dummy			0.006 (0.016)				
No dummy			-0.013 (0.021)				
Human beings evolved from other living things							
Yes dummy				0.015 (0.017)			
No dummy				0.007 (0.016)			
I am deeply religious							
Yes dummy					-0.029 ** (0.013)		
No dummy					-0.022 * (0.013)		
Religions							
Christian × Deeply religious dummy						-0.015 (0.012)	
Ohterwise × Deeply religious dummy						-0.031 * (0.017)	-0.030 * (0.017)
Protestant × Deeply religious dummy							-0.021 * (0.012)
Catholic × Deeply religious dummy							-0.026 * (0.014)
Other Christian × Deeply religious dummy							0.031 (0.031)
Confidence	0.003 (0.003)	0.002 (0.003)	0.002 (0.003)	0.002 (0.003)	0.003 (0.003)	0.003 (0.003)	0.003 (0.003)
Impatience	0.012 (0.008)	0.012 (0.008)	0.012 (0.008)	0.012 (0.008)	0.012 (0.008)	0.012 (0.008)	0.012 (0.007)
Debt aversion	-0.101 (0.084)	-0.105 (0.083)	-0.095 (0.084)	-0.097 (0.085)	-0.097 (0.082)	-0.110 (0.084)	-0.106 (0.082)
Male dummy	0.010 (0.011)	0.010 (0.011)	0.010 (0.012)	0.009 (0.012)	0.009 (0.011)	0.008 (0.011)	0.009 (0.011)
Age	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 * (0.000)
Other white race dummy	0.095 *** (0.030)	0.093 *** (0.030)	0.093 *** (0.030)	0.099 *** (0.031)	0.095 *** (0.030)	0.103 *** (0.032)	0.106 *** (0.032)
Education years	-0.010 *** (0.002)	-0.010 *** (0.002)	-0.010 *** (0.002)	-0.011 *** (0.002)	-0.010 *** (0.002)	-0.010 *** (0.002)	-0.010 *** (0.002)
Having children dummy	0.001 (0.014)	0.001 (0.014)	0.001 (0.014)	0.003 (0.014)	0.004 (0.013)	0.003 (0.014)	0.004 (0.013)
Log of household's income	-0.018 *** (0.006)	-0.018 *** (0.006)	-0.018 *** (0.006)	-0.019 *** (0.006)	-0.018 *** (0.006)	-0.018 *** (0.006)	-0.018 *** (0.006)
Observations	1474	1474	1474	1474	1474	1474	1474
Log likelihood	-329.7	-329.3	-330.4	-330.5	-328.5	-329.6	-327.4

Note:

1. This is estimated by probit model.

2. The estimation retuls are marginal effect.

3. Robust Standard errors are shown in the parentese.

4. **, * and *** indicate the varuabls are significant at 10%, 5% and 1% signficance level, respectively.

Table 5. Strongly Spoiling Attitude (Answer 1) in Japan

Dependent variable: Choice 1. in fever	(1)	(2)	(3)	(4)	(5)	(6)
Life after death exists						
Yes dummy	-0.007 (0.010)					
No dummy	-0.008 (0.010)					
God or Gods exists						
Yes dummy		-0.001 (0.009)				
No dummy		-0.016 (0.010)				
God knows about all the wrong we've done						
Yes dummy			-0.004 (0.009)			
No dummy			-0.011 (0.010)			
Human beings evolved from other living things						
Yes dummy				-0.008 (0.009)		
No dummy				0.000 (0.014)		
I am deeply religious						
Yes dummy					0.009 (0.018)	
No dummy					-0.018 (0.013)	
Religions						
Christian × Deeply religious dummy						0.055 (0.068)
Buddhism × Deeply religious dummy						0.016 (0.022)
Otherwise × Deeply religious dummy						0.0464 (0.041)
Confidence	0.007 ** (0.003)	0.008 ** (0.003)	0.007 ** (0.003)	0.006 ** (0.003)	0.007 ** (0.003)	0.006 ** (0.003)
Impatience	-0.003 (0.007)	-0.003 (0.007)	-0.003 (0.007)	-0.003 (0.007)	-0.004 (0.007)	-0.003 (0.007)
Debt aversion	0.210 (0.129)	0.204 (0.128)	0.205 (0.130)	0.203 (0.130)	0.201 (0.128)	0.202 (0.130)
Male dummy	0.024 *** (0.009)	0.026 *** (0.009)	0.024 *** (0.009)	0.024 *** (0.009)	0.025 *** (0.009)	0.025 *** (0.009)
Age	0.002 *** (0.000)	0.002 *** (0.000)	0.002 *** (0.000)	0.002 *** (0.000)	0.002 *** (0.000)	0.002 *** (0.000)
Education years	-0.006 *** (0.002)	-0.006 *** (0.002)	-0.006 *** (0.002)	-0.006 *** (0.002)	-0.006 *** (0.002)	-0.006 *** (0.002)
Having children dummy	0.002 (0.012)	0.001 (0.012)	0.001 (0.013)	0.002 (0.013)	0.002 (0.012)	0.002 (0.012)
Log of household's income	-0.011 * (0.006)	-0.011 * (0.006)	-0.011 * (0.006)	-0.011 * (0.006)	-0.011 * (0.006)	-0.011 * (0.006)
Observations	2457	2457	2457	2457	2457	2457
Log likelihood	-497.9	-497	-497.8	-497.9	-496.1	-496.6

Note:

1. This is estimated by probit model.

2. The estimation results are marginal effect.

3. Robust Standard errors are shown in the parentheses.

4. *, ** and *** indicate the variables are significant at 10%, 5% and 1% significance level, respectively.