

The Role of Moral Principles in Resolving Intergenerational Conflicts of Interest

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Abstract

With the increase of human power, intergenerational conflicts of interest have emerged as new problems, particularly in terms of environmental and financial sustainability. This study examined the role of moral principles in inducing people to act, taking into account the interests of future generations. A survey was conducted among a representative sample of Japanese citizens to investigate the function of eight moral principles in resolving conflicts in terms of participants' assessment of the appropriateness of the principles and their willingness to follow them. With respect to the absolute level of the function of moral principles, the results offer some, albeit cautious, promise of a strategy to resolve conflicts through moral principles. Overall, participants responded positively to these principles. Furthermore, the survey revealed that older and more educated individuals responded better. Given their leading roles in society, this finding supports the use of the principles. However, it also suggests that reaching out to those who did not respond to the strategy is challenging. The study revealed that a non-negligible proportion of respondents had only weak responses to any of the principles and that they either needed to be exposed to different principles or provided with different resources to develop sensitivity to moral ideas. The survey also revealed the relative order of principles. Egalitarianism and utilitarianism scored lower, but some principles, including Mill's harm principle and Scheffler's argument that the survival of humanity and the world itself has value, scored higher.

Keywords

climate change; experimental philosophy; fiscal policy; intergenerational conflicts; intergenerational ethics; moral principle

1. Introduction

With the increase of human power, intergenerational conflicts of interest have emerged as a new problem, being particularly manifested in environmental and financial sustainability (Tremmel, 2014, p. 9). In a democracy, voters are limited to currently living adults, and future generations cannot participate in decision-making. Contract theory allows people to respect each other's vital interests based on an agreement; however, future generations cannot be parties to the agreement (Gardiner, 2009). Reforms to political institutions have been proposed to ensure that decision-making considers the interests of future generations (Gonzalez-Ricoy & Gosseries, 2016; Hiromitsu, 2024; Kinski & Whiteside, 2023; Saijo, 2022; Smith, 2021). Saijo (2022) conducted experiments in which imaginary future generations, representing the interests of the future, were introduced into current decision-making and showed that decisions were more aligned with such interests. In addition to reforming political institutions, research has explored the conditions under which policies aligned with the interests of future generations can win the support of current generations. Using environmental policy as an example, Huber et al. (2020) showed that policy instruments that were perceived as effective, fair, and unobtrusive received more public support.

This study examines the conditions that induce people to act in the interests of future generations. The study is not about reforming the government structure nor about changing the appearance of policies to make them more acceptable; it is about overcoming the divergence of interests between generations to induce voluntary action in the interests of future generations. Specifically, this study examined the role of moral principles in encouraging people living today to act in ways that consider the interests of future generations. Through moral persuasion, moral principles free people from narrow personal interests and encourage them to act based on broader considerations. People do not necessarily act solely on narrow personal interests; they may also act on morality. However, individuals do not always act in accordance with moral expectations. The discrepancy between morality and action was termed *akrasia* by Aristotle (n.d.) and *moral weakness* by Hare (1965). Thus, it is necessary to understand what motivates people to consider future generations.

This study considers the eight moral principles. Moral philosophy is a set of arguments that urges people to act for justifiable reasons. Six of the eight principles were taken from the conventional theory; that is, morality usually applied within the same generation. The conventional arguments examined include egalitarianism, utilitarianism, communitarianism, altruism, the harm principle, and sufficientarianism. These arguments have been translated into the intergenerational context. Two of the eight were derived from arguments developed specifically in intergenerational ethics. These principles include indirect reciprocity and world survival. Reciprocity implies a mutually beneficial relationship; however, because time flows only one way between generations, normal reciprocity does not work. Indirect reciprocity is a relationship in which benefits are passed on in a chain from one generation to the next. Finally, the principle of world survival is based on Scheffler's (2013) argument that people are interested in the survival of the world and humanity even after their individual deaths.

To understand the power of these moral principles in motivating people, a survey was conducted among a representative sample of Japanese citizens to examine the role of the eight principles in resolving intergenerational conflicts, in terms of participants' assessment of the appropriateness of the principles and their willingness to act on them. Disconnects between appropriateness and the willingness to act could include weaknesses of will and there could also be a difference between principles that are easier or more

difficult to translate into action. Japan was chosen as a society facing difficulties in resolving intergenerational conflicts. Among the seven industrialized countries, Japan has the highest ratio of government debt to gross domestic product. The survey was designed to determine how the public perceived moral principles in intergenerational contexts. The value of moral principles depends on whether the public perceives them as persuasive and acts toward the realization of the social state they demand. In terms of the absolute power of moral principles, the survey offered some, albeit cautious, promise for a strategy of resolving conflicts through moral principles. Overall, participants responded positively to these principles. The survey revealed that older and more educated individuals responded better. Given their leading roles in society, this finding supports the use of these principles. However, this also suggests the challenge of reaching out to those who do not respond to the strategy. The study revealed that a non-negligible proportion of respondents had only weak affinities for any of the principles and that they either needed to be exposed to different principles or provided with different resources to help them develop sensitivity to moral ideas. The survey also revealed the relative order of principles. Egalitarianism and utilitarianism scored lower; however, some principles, including the harm principle and world survival, scored higher. The survey also presented situations in which moral principles were applied to two major sustainability issues—climate change and fiscal policy (accumulated debt)—and asked participants whether they found each principle persuasive. It was revealed that moral principles worked for fiscal policy, although not as well as climate change, which is a more typical intergenerational issue.

In the literature, this study can be placed within the experimental and behavioral traditions of norms research. It is an exploration of intergenerational ethics using the behavior of the general public that emerged as a survey response. Studies on norms through surveys and experiments have been conducted in the fields of experimental philosophy (e.g., Knobe, 2003), psychology (e.g., Kameda et al., 2016), and economics (e.g., Hiromitsu, 2019). However, research on the function of morality in intergenerational issues is limited. Hurlstone et al. (2020) and Kameda (2023) are among the few exceptions; however, the number of moral arguments examined in these studies was small (three in the former and one in the latter). To the best of the author's knowledge, this is the first study to assess a broad range of intergenerational moral principles through a survey.

The remainder of this article is organized as follows: Section 2 describes the survey design. Section 3 presents the survey results. Section 4 discusses the study's findings. Finally, Section 5 concludes the article.

2. Survey Setup

2.1. Conceptual Framework and Expectation

This study uses the results of a survey of the general public in Japan to elucidate the power of moral principles in motivating people. The validity of moral principles was considered in terms of how people perceived these principles and whether they acted in accordance with them. Knowledge of public feelings is helpful in understanding how to use moral principles to overcome interest divergence among generations and spur voluntary action in the interests of future generations.

Eight principles were selected for this study, and Table 1 summarizes them. Each principle was presented as a statement, which is shown in the “statements of principle” column. The “names” column represents the

names given to the statements; however, they were for use in this article only and were not shared with the participants. Six principles, from egalitarianism to sufficientarianism, were taken from the conventional theory, and indirect reciprocity and world survival were taken from intergenerational ethics.

Table 1. List of moral principles.

Statements of principle	Names
We, the people living today, need to ensure that the degree of well-being of those who will live in the future is the same as that of ourselves.	Egalitarianism (EG)
We, the people living today, need to maximize the sum of the well-being of ourselves and those who will live in the future.	Utilitarianism (UT)
We, the people of today and those of the future, are members of the same community, and we need to increase the well-being of those in the future as well as our own.	Communitarianism (COM)
We, the people living today, need to love people who will live in the future and promote their well-being.	Altruism (ALT)
We, the people living today, need to avoid causing harm to people who will live in the future.	Harm principle (HP)
We, the people living today, need to ensure that people who will live in the future will enjoy at least a satisfactory degree of well-being.	Sufficientarianism (SUF)
We, the people living today, have inherited the civilization and society of our ancestors. We need to further develop civilization and society and pass it on to the people who will live in the future.	Indirect reciprocity (INR)
We, the people living today, need to ensure that humanity and civilization do not cease to exist due to our actions.	World survival (SUV)

First, egalitarianism has been found in various documents, including the United States Declaration of Independence (1776) and the Universal Declaration of Human Rights (United Nations, 1948, Art. 7). In translating egalitarianism into an intergenerational context, the author considered Wolf's (2021, p. 2) presentation that "generations, or individual people who are members of different generations, should be equal in some way." Wolf noted that intergenerational contexts typically assume that later generations are better off, suggesting a need for correction. However, the survey adopted a version of intergenerational egalitarianism closer to Wolf's original presentation because of recent concerns that future generations would be worse off (Tremmel, 2014, p. 1). The survey asked respondents to assume that "our actions could have a positive or negative impact on people in the future, separated by time," suggesting that there could be both improvements and deteriorations. Second, utilitarianism originated with Bentham (1823/2017) and has remained an important theory for more than two centuries. In translating utilitarianism into intergenerational terms, this study draws on economics, where it is common to formulate the utility function of present and future generations so that the sum of their functions is maximized (e.g., Arrow, 1999). Third, communitarianism is a long-standing idea among people who form and live in societies, and it continues to be one of the most important moral principles (e.g., Kymlicka, 2002, Chapter 6). In translating communitarianism into an intergenerational context, the author considered Marshall (1993, p. 109), who argued that in communitarianism, there is a sense in which present and future generations share the same *identity*; accordingly, what is in the interest of one generation is in the interest of the other. Fourth, regarding altruism, Kraut (2020) pointed out that behavior is usually described as altruistic when it is motivated by a desire to benefit someone other than oneself for the sake of that person and that the term is used as the opposite of "self-interested" or "selfish" or "egoistic." In this study, it is rephrased as "love," which was easier for

respondents to understand. Fifth, Mill (2008) proposed the harm principle, which argues that people should be free to act as they wish unless their actions harm others. For its translation into an intergenerational context, Howarth (2012, p. 338) offered the example of “future generations are entitled to protection from harm.” Sixth, sufficientarianism was proposed by Frankfurt (1987) as an alternative to egalitarianism, in which the moral significance is that everyone has sufficient rather than strictly equal resources. It is translated into an intergenerational argument by Meyer and Pözlner (2022) and Page (2007). Seventh, indirect reciprocity refers to the idea that it is desirable to pass on the good things inherited from previous generations to succeeding generations, which Gosseries (2009, p. 130) calls descending reciprocity. This differs from reciprocity within the same generation. Finally, the principle of world survival is based on Scheffler’s (2013) argument that people are interested in the survival of the world and humanity even after death. Scheffler pointed out that much of the value of one’s life depends on the continuation of the human race. Indirect reciprocity and world survival are arguments that have been proposed as intergenerational ethics.

The survey asked respondents about the appropriateness of each principle and their willingness to act on it. The survey helped determine how the public felt about the moral principles used in an intergenerational context. The survey also examined the respondents’ personal attributes: gender, age (in one-year increments), education, political affiliation, place of residence, marital status, and occupation. Additionally, the survey assessed whether governments could effectively use these principles to persuade respondents to accept their proposed climate change or fiscal consolidation measures.

The hypotheses of this study were as follows: First, the author expected the moral principles developed by the experts to be well accepted by the respondents. If experts share a sense of morality with their ultimate audience, the general public, then the principles would be well accepted by the people. Second, the author expected the participants’ responses to be higher for principles that evoke emotions. Slovic (2010) noted that emotional components are important factors in motivating individuals to help others. Some studies have shown that providing specific examples of people in need motivates them to act more than providing statistical data (Kawata et al., 2023; Winterbottom et al., 2008). Of the eight principles, the one that was more likely to evoke emotion was the harm principle, which consisted of a strong imperative for prohibiting harm. Egalitarianism, at least in the version presented in this study, appears to have limited emotional appeal. Third, the author hypothesized that scores for willingness to act would be lower than those for appropriateness because people would not always act according to the principles they considered appropriate. An interesting question was whether there were principles that lowered the action scores. Fourth, in terms of relationships with personal characteristics, the author expected these principles to be stronger among young and educated people. The author believed that young people were closer to future generations and that the more educated they were, the more they would be informed about moral principles. Regarding party affiliation, the author hypothesized that scores would be lower among supporters of ruling parties because the author considered them pragmatists rather than idealists. Finally, regarding the application to climate change and fiscal consolidation, if climate change is a more typical intergenerational problem than fiscal sustainability, the principles are expected to have a greater influence on the issue of climate change.

2.2. Procedures

The survey was conducted online in Japan on August 17, 2023. The survey questionnaire is available in the Supplementary File. To help respondents understand the framework of intergenerational issues, the survey

began with the following explanation:

We who live today and those who will live in the future are separated by time and cannot speak directly to each other or make social decisions around the same table. However, we and people in the future do not live on separate planets and our actions can have a positive or negative impact on people in the future who are separated by time.

The survey was conducted on commission by Intage, Inc. Responses were received from 415 individuals (response rate: 13.0%), which is considered a sufficiently large sample size given that the sampling error for the population was less than 5%. Respondents to the survey were recruited to be representative of the Japanese population aged 20 and older and their demographics are shown in Table 2. The proportions of respondents by demographics were largely consistent with those of the population derived from official statistics (e.g., Ministry of Internal Affairs and Communications, 2022a, 2022b, 2023a, 2023b). Support for the ruling parties differed from the survey conducted by the public broadcaster (NHK, Japan Broadcasting

Table 2. Respondent demographics ($N = 415$).

	Numbers of respondents (percentage in the total respondents) ³	Population in Japan (in percentage) ⁴
Male/female	211/204 (50.8%)	49.7% ⁵
Age	55 (13.3%) in their 20s, 63 (15.2%) in their 30s, 77 (18.6%) in their 40s, 81 (19.5%) in their 50s, 70 (16.8%) in their 60s, and 69 (16.6%) in their 70s	13.8% in their 20s, 14.6% in their 30s, 18.5% in their 40s, 19.3% in their 50s, 16.1% in their 60s, and 17.7% in their 70s ⁵
Less than university/ university or higher	248/167 (59.8%)	76.2% ⁶
Ruling parties supporters/others ¹	59/356 (16.8%)	37.5% ⁷
Metropolitan areas residents/non-residents ²	234/184 (56.4%)	55.1% ⁸
Married/unmarried	220/195 (53.0%)	59.5% ⁹
Occupations	157 (37.8%) in regular employment, 26 (6.3%) in self-employment/free employment, 78 (18.8%) in non-regular employment, 12 (3.9%) in student, and 142 (34.2%) in no job (including homemakers)	35.7% in regular employment (including executives), 6.2% in self-employment/free employment, 19.1% in non-regular employment, and 39.1% in no job (including student, and homemakers) ¹⁰

Notes: ¹ The ruling parties were the Liberal Democratic Party and Komei; others included nonparty support and do-no-want-to-answer. ² The metropolitan areas were Kanto (Tokyo, Saitama, Chiba, and Kanagawa), Kansai (Osaka, Kyoto, Hyogo, and Nara), and Tokai (Aichi, Gifu, and Mie). ³ The percentages shown are the number of respondents on the left (e.g., males) divided by the total number of respondents (415). ⁴ The percentages shown are the percentage of those who fall to the left (e.g., males) divided by the total population in question. ⁵ Ministry of Internal Affairs and Communications' (2023a) population estimates, July 1, 2023. ⁶ Ministry of Internal Affairs and Communications' (2022b) 2020 census. ⁷ NHK (2023), a survey conducted in August 2023. ⁸ Ministry of Internal Affairs and Communications' (2022a) population estimates, October 1, 2022, age 15–64. ⁹ Cabinet Office (2022). ¹⁰ Ministry of Internal Affairs and Communications' (2023b) labor force survey (average of 2022, age 15 and above).

Corporation, 2023) during the same period, but this may be partly due to the difference in the questionnaires. This study allowed respondents who did not want to answer (14.2%), but the broadcaster did not. Finally, to reduce social desirability bias, the survey was conducted online and anonymously (responses could not be traced back to specific respondents).

2.3. Survey 1

Survey 1 asked the participants to rate the appropriateness of the principles on a seven-point Likert scale (6 = *very appropriate*, 5 = *appropriate*, 4 = *somewhat appropriate*, 3 = *cannot say either way*, 2 = *somewhat inappropriate*, 1 = *it is inappropriate*, 0 = *it is highly inappropriate*; in the actual survey, 6 was numbered 1, in ascending order, and 0 was numbered 7). Additionally, respondents were asked to indicate their willingness to act following these principles (6 = *I am strongly willing to act*, 5 = *I am willing to act*, 4 = *I am willing to act a little*, 3 = *cannot say either way*, 2 = *I am not willing to act as much*, 1 = *I am not willing to act*, and 0 = *I am not willing to act at all*; in the actual survey, 6 was numbered 1, in ascending order, and 0 was numbered 7). The principles were presented as short views and supplemental explanations were provided to facilitate respondents' understanding. The names of the principles (e.g., "egalitarianism") were not shared with participants. The order of the presentation of the principles was randomized for each respondent.

2.4. Survey 2

Survey 2 included case examples of the government proposing tax increases to address climate change and accumulated government debt that is expected to harm future generations. Assuming that the government used the eight principles in Survey 1 to persuade respondents, they were asked to identify any persuasive principles. If they found no persuasive principles, they were asked to indicate so. The order in which the issues of climate change and fiscal policy were presented was randomized for each respondent. Eight principles were also randomized for each respondent. Survey 2 followed Survey 1 because it involved applying the principles to specific policy issues. Through Survey 1, respondents gained a deeper understanding of the principles, which enabled them to provide thoughtful responses in policy application situations.

3. Results

3.1. Appropriateness (Survey 1)

Figure 1 shows a histogram (in percentages) of the participants' responses to Survey 1 regarding the appropriateness of each principle. The common distribution across principles was biased toward values greater than 3 (*cannot say either way*), with 3 being the most frequent value. There were also differences in the distribution among principles. Compared to egalitarianism and utilitarianism, the distributions of 5 and 6 are more in the harm principle, indirect reciprocity, and world survival.

Two ranking methods were used: majority judgment (Balinski & Laraki, 2011) and ranking on means. Majority judgment is the ranking based on the median of the samples, which, when used in conjunction with ranking by means, increases the objectivity of the rankings. Table 3 shows the majority judgment ranking, where the principles were ranked first according to their median scores. If the medians were the same, the higher the number of respondents scoring at or above the median, the higher the ranking. The ranking for appropriateness

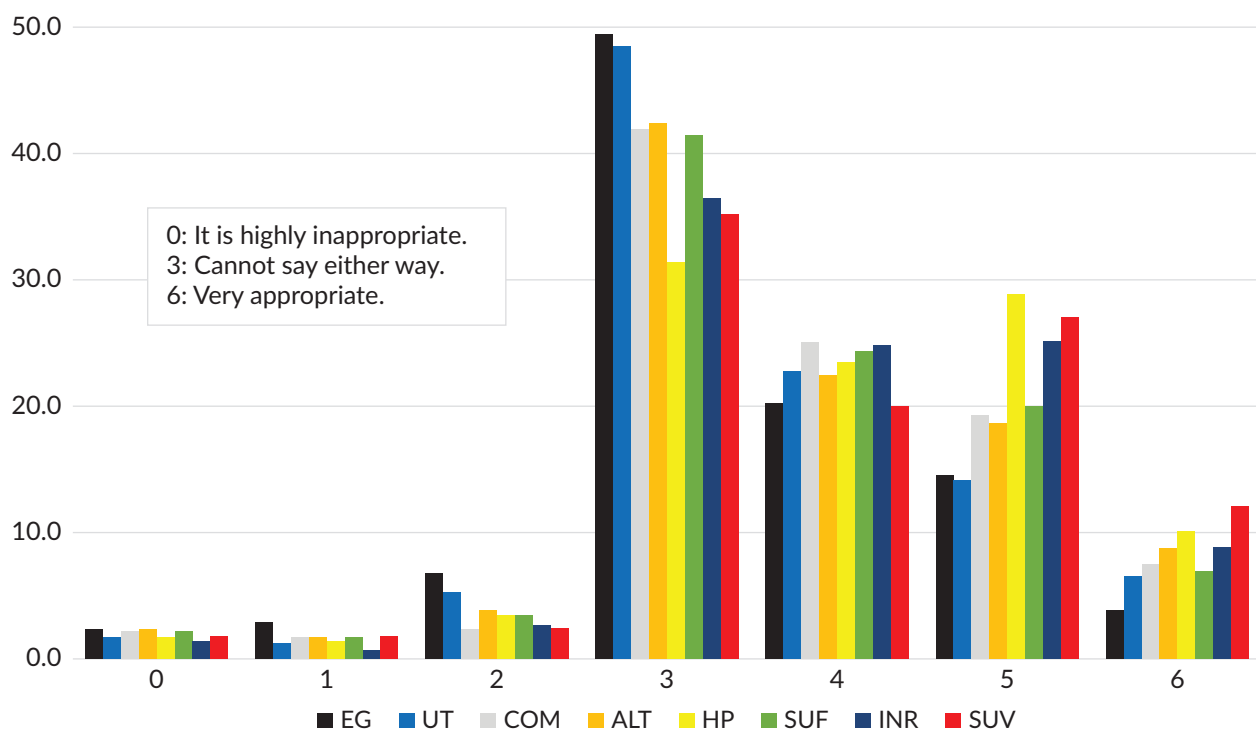


Figure 1. Histogram of scoring for responses in appropriateness (in %, N = 415).

on the left shows that five principles (harm principle, world survival, indirect reciprocity, communitarianism, and sufficientarianism) had median scores of 4 (*somewhat appropriate*). The harm principle ranked highest and egalitarianism ranked lowest. Figure 2 illustrates the ranking by means. The appropriateness in the left vertical line shows that the means of all principles were greater than 3. The ranking by means is similar to the ranking by majority judgment, suggesting that the rankings are robust regardless of the ranking method. A test of the difference in means with the lowest rank for egalitarianism showed that all other seven principles were significant.

Table 3. Rankings by majority judgment.

	Appropriateness		Willingness to act		
	Median	Number of median and above	Median	Number of median and above	
HP	4	258	HP	4	231
SUV	4	245	SUV	4	221
INR	4	244	INR	4	211
COM	4	215	SUF	3	375
SUF	4	213	COM	3	368
ALT	3	382	ALT	3	364
UT	3	381	UT	3	364
EG	3	365	EG	3	362

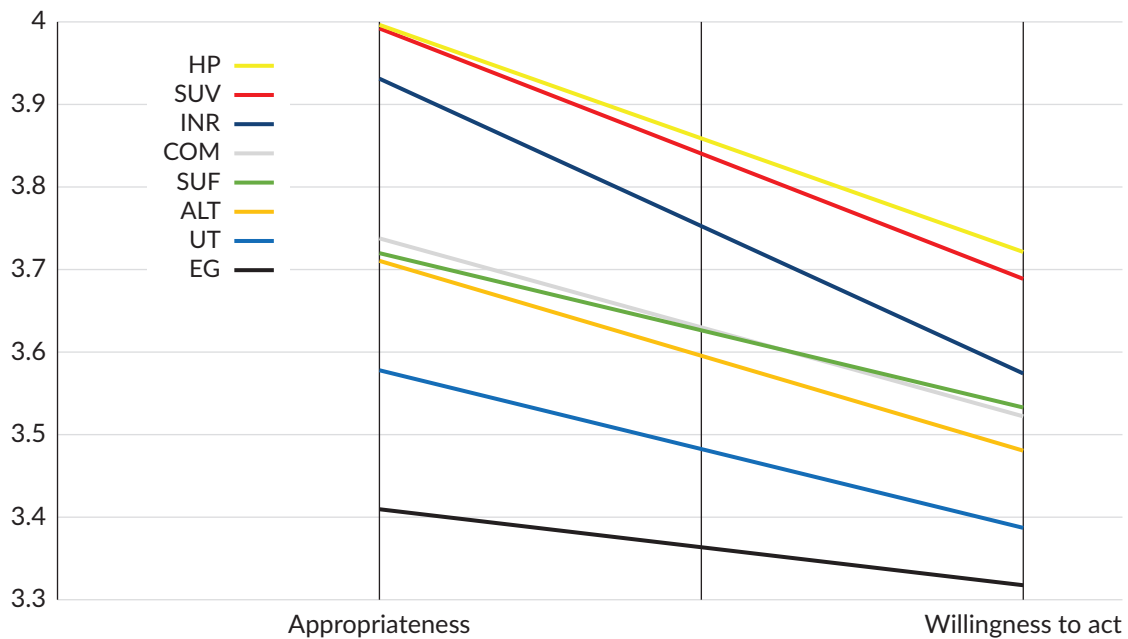


Figure 2. Ranking by means (appropriateness vs. willingness to act).

3.2. Willingness to Act (Survey 1)

We now examine the participants' responses regarding their willingness to act. As shown in Figure 3, the distribution was skewed toward values greater than 3 (*cannot say either way*), with 3 being the most common value. Nevertheless, there was a tendency across principles for responses of 5 and 6 to decrease and responses of 3 and 4 to increase. Table 3 and Figure 2 show the rankings by majority judgment and the mean, respectively. First, the scores generally remained higher than 3, but the levels decreased. There were fewer but still three principles (harm principle, world survival, and indirect reciprocity) with a median score of 4 (*I am willing to act a little*). The means of all principles remained above 3. Second, from appropriateness to action, while scores for the lowest-ranked egalitarianism did not decrease significantly, scores for higher-ranked principles decreased significantly. In other words, the gap between the principles narrowed—When testing the difference between the means of the scores for appropriateness and action, the difference was not significant for egalitarianism ($p = 0.389$); however, it was significant for the other principles. Finally, there were no significant changes in the rankings for majority judgment or mean scores.

3.3. Responses and Personal Attributes (Survey 1)

Table 4 presents the results of the ordered logit regression of the relationship between responses to appropriateness and personal attributes. For all principles, the higher the age and education, the more likely the participants were to respond that the principles were appropriate. The results for age differed from the author's expectations, whereas those for education were consistent with my hypothesis. The ruling party's affiliation showed no significance, which was also contrary to the author's expectations. Metropolitan residence was associated positively with utilitarianism, altruism, and the harm principle, whereas married status was positively associated with the harm principle, indirect reciprocity, and world survival. The marginal effects of the significant variables are shown in Table 1 of the Supplementary File. A one-year increase in age increased the probability of scoring a 5 in appropriateness by 0.0018 for egalitarianism

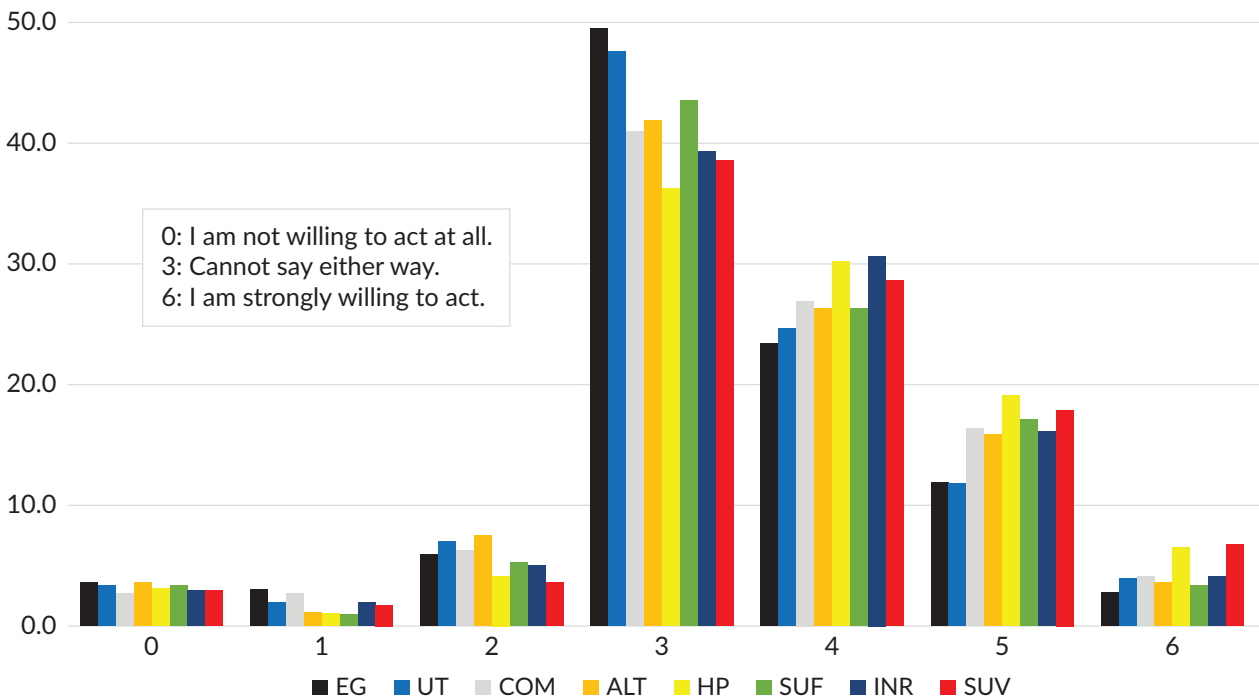


Figure 3. Histogram of scoring for responses in willingness to act (in %, $N = 415$).

Table 4. Responses on appropriateness and personal attributes (ordered logit).

	EG	UT	COM	ALT	HP	SUF	INR	SUV
	Coef. (Std. Err.)	Coef. (Std. Err.)	Coef. (Std. Err.)	Coef. (Std. Err.)	Coef. (Std. Err.)	Coef. (Std. Err.)	Coef. (Std. Err.)	Coef. (Std. Err.)
Female (=1)	0.124 (0.209)	0.023 (0.208)	0.192 (0.200)	0.238 (0.205)	0.095 (0.205)	0.104 (0.212)	0.109 (0.211)	0.083 (0.206)
Age	0.016** (0.007)	0.021*** (0.007)	0.032*** (0.006)	0.023*** (0.006)	0.021*** (0.006)	0.017** (0.007)	0.020*** (0.007)	0.031*** (0.007)
University (=1)	0.415* (0.218)	0.472** (0.218)	0.787*** (0.212)	0.619*** (0.203)	0.827*** (0.201)	0.565*** (0.215)	0.703*** (0.205)	0.884*** (0.206)
Ruling parties (=1)	0.067 (0.266)	-0.242 (0.251)	-0.011 (0.272)	-0.009 (0.262)	-0.433 (0.278)	0.007 (0.266)	-0.259 (0.267)	-0.298 (0.258)
Metropolitan areas (=1)	0.202 (0.186)	0.425** (0.194)	0.254 (0.182)	0.429** (0.183)	0.441** (0.182)	0.192 (0.185)	0.271 (0.180)	0.277 (0.178)
Marriage (=1)	0.135 (0.201)	0.293 (0.213)	0.139 (0.195)	0.289 (0.190)	0.406** (0.201)	0.260 (0.200)	0.556*** (0.205)	0.394* (0.216)
Self-employed (=1)	0.134 (0.406)	0.492 (0.364)	-0.093 (0.418)	0.014 (0.443)	0.573 (0.456)	0.049 (0.349)	-0.099 (0.394)	0.418 (0.393)
Nonregular (=1)	0.114 (0.114)	0.023 (0.290)	-0.092 (0.270)	0.100 (0.270)	0.279 (0.273)	-0.160 (0.294)	0.053 (0.278)	0.088 (0.277)
Student (=1)	0.163 (0.979)	1.283** (0.610)	0.511 (0.600)	-0.063 (0.937)	1.268* (0.722)	0.493 (0.794)	-0.416 (0.697)	1.156 (0.763)
No job (=1)	0.178 (0.254)	0.313 (0.268)	-0.074 (0.249)	-0.086 (0.248)	0.488* (0.251)	0.120 (0.260)	0.130 (0.254)	0.009 (0.260)
Pseudo R^2	0.015	0.033	0.042	0.031	0.047	0.022	0.040	0.051

Notes: The dependent variable is "responses to individual principles"; $N = 415$; *** 1% significance, ** 5% significance, * 10% significance.

(lowest ranking) and 0.0026 for the harm principle (highest ranking), and a university degree increased the probability by 0.0455 for egalitarianism and 0.1037 for the harm principle. Table 2a in the Supplementary File shows the regression of the scores for each principle, minus the scores for egalitarianism (lowest ranking), with the respondents' attributes. Communitarianism and world survival showed positive relationships with age, suggesting that older respondents preferred them. Education positively affected indirect reciprocity and world survival. The marginal effects of the significant variables are reported in Table 2b in the Supplementary File. A one-year increase in age increased the probability of adding a score of 0.0023 for communitarianism and 0.0015 for world survival, and a university degree increased it by 0.0587 for the harm principle, 0.0474 for indirect reciprocity, and 0.0359 for world survival.

Table 3a in the Supplementary File shows the results of an ordered logit regression between willingness to act and respondent attributes. These results are similar to those obtained for appropriateness. Age was positively significant for all principles, and having a university degree was also positively significant, except for utilitarianism. Metropolitan residence was positively significant for the harm principle and world survival, whereas marriage was positively significant for the harm principle. The marginal effects of the significant variables are reported in Table 3b in the Supplementary File. Increasing age by one year also increased the probability of scoring 5 for egalitarianism (lowest ranking) by 0.0013 and for the harm principle (highest ranking) by 0.0029; having a university degree increased the probability of scoring 5 for egalitarianism by 0.0430 and for the harm principle by 0.0908.

3.4. Cluster Analysis (Survey 1)

Figure 4 shows the results of the cluster analysis. The k-means method was used, and the number of clusters was set to three so that a sufficient number of respondents could be classified in each cluster. The sample means represent the averages of 415 respondents for appropriateness and willingness to act. Regarding appropriateness, there were 109 respondents in Cluster 1, 147 in Cluster 2, and 159 in Cluster 3. As for willingness to act, there were 85 respondents in Cluster 1, 101 in Cluster 2, and 174 in Cluster 3. Figure 4a shows the mean of the responses for appropriateness in each cluster. Cluster 1 had the highest score, Cluster 2 was in the middle, and Cluster 3 had the lowest score. Clusters 1 and 2 scored lower for egalitarianism, similar to the overall trend of the respondents. Cluster 2 scored higher on the harm principle and world survival. Cluster 3 gave a muted response to all principles. Figure 4b shows an analysis of willingness to act. The general trend was similar to that for appropriateness, but compared to appropriateness, the gaps between the principles were narrowing even in Clusters 1 and 2, and higher scores for the harm principle and world survival were less salient. In Cluster 3, the results were the same as those for appropriateness, with all principles scoring low across the boards.

Table 4 in the Supplementary File shows the proportions of respondent attributes for each cluster and the results of the tests for the difference in proportions (i.e., means) between them. The clusters for appropriateness are presented in Table 4a. Compared to Clusters 1 and 2, respondents in Cluster 3 had salient characteristics. Those in Cluster 3 appeared to be younger (45.8 vs. 56.0 years old; Cluster 3 vs. Cluster 1; same below in Section 3.4), less educated (27.0% university degree vs. 51.4%), less metropolitan (49.1% metropolitan vs. 61.5%), less married (42.1% married vs. 67.0%), and less likely to have no job (27.0% vs. 42.2%, including homemakers and those not wanting to work). In Table 4b in the Supplementary File, the clusters of willingness to act show similar results.

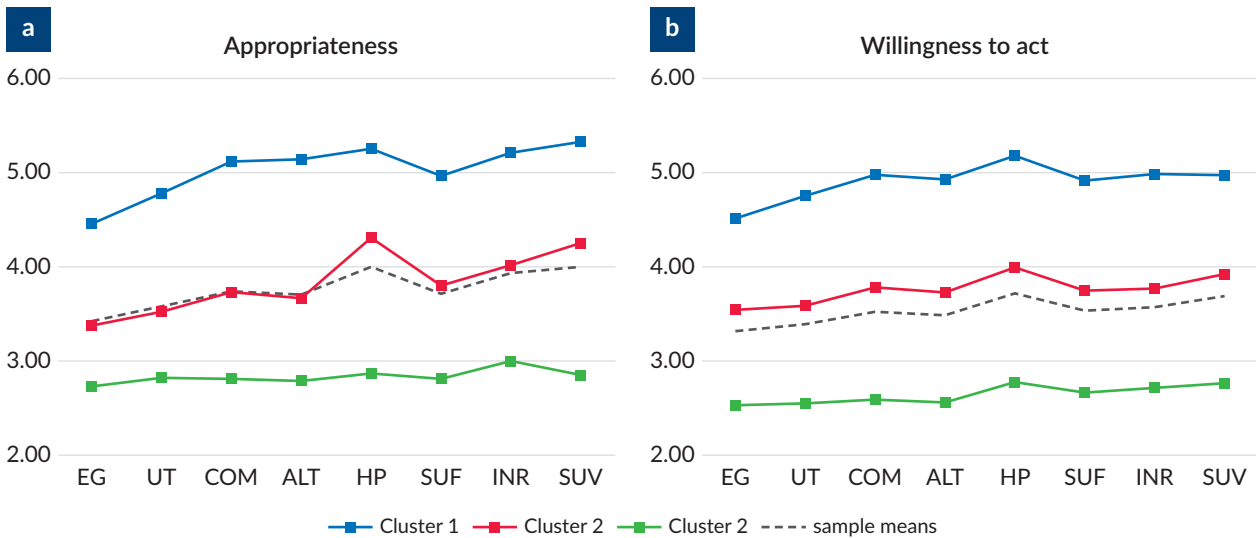


Figure 4. Means of responses in each cluster.

3.5. Survey 2

Table 5 shows the percentage of respondents who found each principle persuasive when issues related to climate change and fiscal policy were presented. *p*-values were obtained from tests of the differences between climate change and fiscal policy. With respect to climate change, world survival, the harm principle, and indirect reciprocity were found to be more persuasive (32.8%, 31.8%, and 25.1%, respectively), similar to the results of Survey 1. Approximately one-third (33.7%) of the respondents found no persuasive principles. The same is true for fiscal policy. However, fewer respondents found the harm principle and world survival to be more persuasive in fiscal policy than climate change.

Table 5. Responses in climate change and fiscal policy: Choices of persuasive principles (in %; multiple answers allowed).

	EG	UT	COM	ALT	HP	SUF	INR	SUV	No principles
Climate	11.1	10.4	16.6	14.9	31.8	18.3	25.1	32.8	33.7
Fiscal policy	12.8	10.4	17.6	13.5	26.0*	20.5	28.7	27.0*	38.3
<i>p</i> -value	0.454	1.000	0.713	0.550	0.066	0.430	0.241	0.069	0.170

Notes: *N* = 415; * 10% significance; the *p*-values were obtained from tests of the differences between climate change and fiscal policy.

Table 5a in the Supplementary File shows the regression (ordered logit) of respondents who said they found none of the principles persuasive; they were less likely to be female, older, or married. According to the marginal effects, being female reduced the probability of responding that they did not find any of the principles persuasive by 14.6% for climate change and 14.3% for fiscal policy. While gender was not a significant variable in Survey 1, it played a different role in Survey 2. The same was true for the ruling parties' supporters in fiscal policy. In Survey 1, the support of ruling parties was not significant, but in Survey 2, for the fiscal policy, the support reduced the probability of responding that no principle was persuasive by 12.7%. Finally, the correlation coefficient of the responses between climate change and fiscal policy is presented in Table 5b, with the principles ranked in descending order. The correlation was high (0.843) for

those who reported finding no persuasive principles. The correlations per principle were moderate (highest for the harm principle at 0.562 and lowest for communitarianism at 0.440), suggesting that people treat these two issues roughly equally when applying moral principles.

4. Discussion

First, it should be noted that people generally consider the moral principles of philosophical experts to be appropriate and have the power to motivate them to act. On a seven-point Likert scale ranging from 0 to 6, the median of 3 is *cannot say either way* for both appropriateness and willingness to act, so those who selected 3 would not be led to consider the interests of future generations in response to moral principles. Figure 2 shows that the means of the principle scores were above 3 for both appropriateness and willingness to act, suggesting that moral principles would be effective in resolving intergenerational conflict. When assuming a simple majority decision, it is necessary to consider that the median voter has a deciding vote in a collective decision (Black, 1948). According to the majority judgment in Table 3, there were five principles (harm principle, world survival, indirect reciprocity, communitarianism, and sufficientarianism) with a median of 4 (*somewhat appropriate*) in appropriateness. Even in willingness to act, there were reduced but still three principles (harm principle, world survival, and indirect reciprocity) with a median of 4 (*I am willing to act a little*). Cluster analysis (Figure 4) suggests that a significant number of people responded well to moral principles. However, this study also identified challenges in using moral principles to resolve conflicts of interest. The cluster analysis in Figure 4 shows that a non-negligible proportion of respondents (Cluster 3, 38.3% in appropriateness and 41.9% in willingness to act) provided weak responses to any principle. These respondents were insensitive to the approach of solving intergenerational problems using moral principles. Similarly, in Survey 2, while a significant number of respondents found many of the principles to be persuasive for both climate change and fiscal consolidation, more than one-third responded that none of them were persuasive. Overall, this study offers a promising strategy for resolving intergenerational conflicts through moral principles, also suggesting that there is a challenge in how to approach those who do not respond to the strategy.

Second, knowing which people responded to moral principles and which did not is of great practical importance. The common implication of Surveys 1 and 2 was that older and more educated people responded better to these principles. It also suggests that living in a metropolitan area and being married are positively correlated with moral principles. The positive relationship between moral principles and education is understandable. However, the better response of older adults is not a natural consequence. Studies have shown that older adults with shorter life expectancies lack long-term interest. Blekesaune and Quadagno (2003) found that, in developed countries, support for helping the sick and older people increased among older adults. Such support would increase debt and postpone the burdens to the future. However, it is important to note that responses to moral principles differ from the support for policies, which is influenced by a wide range of considerations, including attitudes toward the gains and losses of policies. Age reflects two factors: life experiences and the cultural norms that prevail during periods of personality formation. First, it is possible that life experiences facilitate the understanding of moral principles. In particular, it is difficult to fully understand intergenerational ethics without life experiences. Those who are older are likely to have a better understanding that there were many generations before us, that we have inherited their legacy, and that future generations will come after us. Scheffler (2013) argued that humans have concerns beyond death, and empirical research supports this argument (Hiromitsu, 2024, Chapter 4). Developmental psychologist Erik Erikson (1950) called this task “midlife generativity,” noting that the act of teaching and

passing on evidence of one's life to the next generation led to the acceptance of one's impending death. In this study, older people were particularly supportive of communitarianism and world survival, suggesting that they were more concerned with something beyond the individual. Second, the positive responses of older adults may be due to the cultural norms that were dominant during their personality development. Japan's older adults are educated by those who lived during the Second World War and may have a strong sense of value beyond the individual. Ogihara et al. (2015) noted that Japanese culture has changed over time, becoming more individualistic. The positive responses from older and more educated people confirmed the promise of using moral principles, given the leading role they play in society. However, it remains a challenge to reach those who are younger and less educated, who must either be exposed to different moral principles or provided with different resources to help them develop sensitivity to moral ideas. The moral principles tested here were limited to only eight, and it would be useful to explore broader moral dimensions, such as reverence for a clean environment (e.g., Haidt, 2012). Regarding the use of resources, Bicchieri (2017, Chapter 4) pointed out that the use of media and small-scale deliberation can change people's norms. The last interesting point regarding personal attributes is that women and supporters of the ruling parties showed significant responses only in Survey 2. This may be due to its setting, in which the government persuaded respondents to accept the necessary measures through principles, which would make women and ruling party supporters reluctant to answer that no principle was persuasive.

Finally, an interesting point concerns the relative evaluation of moral principles. The survey revealed that the harm principle, world survival, and indirect reciprocity are influential, whereas egalitarianism and utilitarianism are less influential. Communitarianism, sufficientarianism, and altruism are ranked between these two groups. This study found that willingness to act was subordinate to appropriateness; however, there was no real change in ranking from appropriateness to willingness to act. Therefore, barriers to action would not be intrinsic to each principle but would be external costs associated with action. Egalitarianism and utilitarianism are important moral theories that address issues within the same generation. Their underperformance in an intergenerational context could be due to the distinctive relationships between generations. Although others within the same generation can be imagined and observed, it is difficult to imagine future generations. Empathy toward others is an important channel (Slovic, 2010). However, the intergenerational context does not allow people to feel the presence of others who should be equal to them or whose happiness should be added to maximize the sum of the happiness of all generations. The other principles evoke more emotions than egalitarianism or utilitarianism. The harm principle, one of the highest principles, prohibits harming future generations and such a negative imperative is evocative. World survival also leads to negative perceptions of world destruction. Indirect reciprocity draws attention to our dependence on our ancestors' legacy and raises our awareness of our responsibility to carry that legacy into the future. There are also aspects of intermediate principles that are more emotionally evocative than egalitarianism or utilitarianism. Communitarianism also evokes a sense of commonality. Sufficientarianism activates a sense that a minimum level of care must be provided by presenting a bottom line. Altruism mobilizes other-regarding feelings. These principles share the motif of "helping others." The principles are ranked according to the degree of emotional arousal, forming a structure in which the group that includes the harm principle, world survival, and indirect reciprocity is at the top, and egalitarianism is at the bottom. The ranking of moral principles obtained in this study could have been affected by changes in the statements in Table 1. However, it would be valuable to emphasize that the moral principles were presented based on previous studies (e.g., Arrow, 1999; Wolf, 2021) and that the principles were presented to the readers in a transparent manner so that follow-up studies could verify their appropriateness, if necessary. The survey

conducted in this study provides a baseline for future research that explores more compelling moral principles. Modifications to these principles may provide clues for improving moral principles and making them more persuasive. For example, sufficientarianism has emerged as an improvement over egalitarianism (Frankfurt, 1987).

5. Conclusion

In this study, a survey was conducted among a representative sample of Japanese citizens to examine the role of eight moral principles in resolving intergenerational conflicts, assessing the appropriateness of the principles and participants' willingness to act in accordance with them. In terms of the absolute level of the principles' function in resolving conflicts, this study offers some promise, albeit cautiously, as a strategy for resolving conflict. Overall, participants responded positively to moral principles. Older and more educated individuals responded better to these principles. Given their leading roles in society, this finding was positive regarding the use of moral principles. However, it also suggests a challenge in approaching those who do not respond to the strategy. The study revealed that a non-negligible proportion of respondents gave only weak support for any of the principles and that these people appeared to be younger and less educated. It was suggested that they either need to be exposed to different moral principles or provided with different resources, such as small group deliberation, to develop their sensitivity to moral ideas. Among the eight tested principles, the harm principle, world survival, and indirect reciprocity were influential, whereas egalitarianism and utilitarianism were not. The author argues that the degree of emotional component in the principles may underlie their ranking. Moral principles have also been shown to work in fiscal policy, although not as well as climate change, which is a more typical intergenerational issue.

Despite these distinct findings, the study has several limitations. First, it examined eight principles derived from moral philosophy. However, moral principles are not limited to these eight. It would be useful to explore broader moral dimensions in the future. Second, although the author took necessary steps to reduce social desirability bias, it is advisable to conduct an experiment with rewards, as required by experimental economics, in order to get respondents to answer the questions fully and honestly. Finally, this study was based on a survey conducted in Japan, and the strength of moral principles may be influenced by culture. Further research in different cultural contexts promises richer insights.

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Conflict of Interests

The author declares no conflict of interests.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

References

- Aristotle. (n.d.). *Nicomachean ethics*. The Internet Classics Archive. <http://classics.mit.edu/Aristotle/nicomachaen.html>
- Arrow, K. J. (1999). Discounting morality, and gaming. In P. R. Portney & J. P. Weyant (Eds.), *Discounting and intergenerational equity* (pp. 13–21). Routledge.
- Balinski, M., & Laraki, R. (2011). *Majority judgment: Measuring, ranking, and electing*. The MIT Press.
- Bentham, J. (2017). *An introduction to the principles of morals and legislation* (J. Bennet, Ed.). Early Modern Texts. <https://www.earlymoderntexts.com/assets/pdfs/bentham1780.pdf> (Original work published 1823)
- Bicchieri, C. (2017). *Norms in the wild: How to diagnose, measure, and change social norms*. Oxford University Press.
- Black, D. (1948). On the rationale of group decision-making. *Journal of Political Economy*, 56(1), 23–34.
- Blekesaune, M., & Quadagno, J. (2003). Public attitudes toward welfare state policies: A comparative analysis of 24 nations. *European Sociological Review*, 19(5), 415–427.
- Cabinet Office. (2022). *Danjo kyodou sankaku hakusyo reiwa yonendoban*. https://www.gender.go.jp/about_danjo/whitepaper/r04/zentai/pdf/r04_print.pdf
- Erikson, E. H. (1950). *Childhood and society*. Norton.
- Frankfurt, H. (1987). Equality as a moral ideal. *Ethics*, 98(1), 21–43.
- Gardiner, D. (2009). A contract on future generations? In A. Gosseries & L. H. Meyer (Eds.), *Intergenerational justice* (pp. 77–118). Oxford University Press.
- Gonzalez-Ricoy, I., & Gosseries, A. (Eds.). (2016). *Institutions for future generations*. Oxford University Press.
- Gosseries, A. (2009). Three models of intergenerational reciprocity. In A. Gosseries & L. H. Meyer (Eds.), *Intergenerational justice* (pp. 119–146). Oxford University Press.
- Haidt, J. (2012). *The righteous mind: Why good people are divided by politics and religion*. Pantheon.
- Hare, R. M. (1965). *Freedom and reason*. Oxford Scholarship Online. <https://doi.org/10.1093/019881092X.001.0001>
- Hiromitsu, T. (2019). Consideration of keys to solving problems in long-term fiscal policy through laboratory research. *International Journal of Economic Policy Studies*, 13(1), 147–172.
- Hiromitsu, T. (2024). *Resolving intergenerational conflicts: An approach from philosophy, economics, and experiments*. Springer.
- Howarth, R. B. (2012). Intergenerational justice. In J. S. Dryzek, R. B. Norgaard, & D. Schlosberg (Eds.), *The Oxford handbook of climate and justice* (pp. 338–353). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199566600.003.0023>
- Huber, R. A., Wicki, M. L., & Bernauer, T. (2020). Public support for environmental policy depends on beliefs concerning effectiveness, intrusiveness, and fairness. *Environmental Politics*, 29(4), 649–673.
- Hurlstone, M., Price, A., Wang, S., Leviston, Z., & Walker, I. (2020). Activating the legacy motive mitigates intergenerational discounting in the climate game. *Global Environmental Change*, 60, Article 102008.
- Kameda, T. (2023). Syohyo (Review). *Research in Social Psychology*, 38(3), 62–63.
- Kameda, T., Inukai, K., Higuchi, S., Ogawa, A., Kim, H., Matsuda, T., & Sakagami, M. (2016). Rawlsian maximin rule operates as a common cognitive anchor in distributive justice and risky decisions. *Proceedings of the National Academy of Sciences*, 113, 11817–11822.
- Kawata, K., McElwain, K., & Nakabayashi, M. (2023). Narrative premiums in policy persuasion. *Political Psychology*. Advance online publication. <https://doi.org/10.1111/pops.12928>
- Kinski, L., & Whiteside, K. (2023). Of parliament and presentism: Electoral representation and future generations in Germany. *Environmental Politics*, 32(1), 21–42.

- Knobe, J. (2003). Intentional action and side effects in ordinary language. *Analysis*, 63(3), 190–194.
- Kraut, R. (2020). Altruism. In E. Zalta & U. Nodelman (Eds.), *Stanford encyclopedia of philosophy*. <https://plato.stanford.edu/entries/altruism>
- Kymlicka, W. (2002). *Contemporary political philosophy: An introduction*. Oxford University Press.
- Marshall, P. (1993). Thinking for the future: Reflections on Avner de-Shalit. *Journal of Applied Philosophy*, 10(1), 105–113.
- Meyer, L., & Pözlner, T. (2022). Basic needs and sufficiency: The foundations of intergenerational justice. In S. M. Gardiner (Ed.), *The Oxford handbook of intergenerational ethics*. Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780190881931.013.23>
- Mill, J. S. (2008). *On liberty and other essays*. Oxford University Press (Original work published 1859).
- Ministry of Internal Affairs and Communications. (2022a). *Jinkou suikei (October 1, 2022)*. <https://www.stat.go.jp/data/jinsui/2022np/index.html>
- Ministry of Internal Affairs and Communications. (2022b). *Kokusei chyouosa reiwa 2nen (2020)*. <https://www.e-stat.go.jp/dbview?sid=0003450581>
- Ministry of Internal Affairs and Communications. (2023a). *Jinkou suikei (July 1, 2023)*. <https://www.stat.go.jp/data/jinsui/pdf/202307.pdf>
- Ministry of Internal Affairs and Communications. (2023b). *Roudouryoku cyousa (average of 2022)*. <https://www.stat.go.jp/data/roudou/sokuhou/nen/dt/pdf/index1.pdf>
- NHK. (2023). *Senko web*. <https://www.nhk.or.jp/senkyo/shijiritsu/archive/2023/08.html>
- Ogihara, Y., Fujita, H., Tominaga, H., Ishigaki, S., Kashimoto, T., Takahashi, A., Toyohara, K., & Uchida, Y. (2015). Are common names becoming less common? The rise in uniqueness and individualism in Japan. *Frontiers in Psychology*, 6, Article 1490. <https://doi.org/10.3389/fpsyg.2015.01490>
- Page, E. (2007). Justice between generations: Investigating a sufficientarian approach. *Journal of Global Ethics*, 3(1), 3–20.
- Saijo, T. (2022). Future design for sustainable nature and societies. In W. Leal Filho, A. M. Azul, F. Doni, & A. L. Salvia (Eds.), *Handbook of sustainability science in the future*. Springer. https://doi.org/10.1007/978-3-030-68074-9_145-1
- Scheffler, S. (2013). *Death and the afterlife*. Oxford University Press.
- Slovic, P. (2010). If I look at the mass I will never act: Psychic numbing and genocide. In S. Roeser (Ed.), *Emotions and risky technologies* (pp. 37–59). Springer.
- Smith, G. (2021). *Can democracy safeguard the future?* Wiley.
- Tremmel, J. C. (2014). *A theory of intergenerational justice*. Routledge.
- United Nations. (1948). *Universal declaration of human rights*. <https://www.un.org/en/about-us/universal-declaration-of-human-rights>
- Winterbottom, A., Bekker, H., Conner, M., & Mooney, A. (2008). Does narrative information bias individual's decision making? A systemic review. *Social Science and Medicine*, 67, 2079–2088.
- Wolf, C. (2021). Intergenerational justice and equality. In S. M. Gardiner (Ed.), *The Oxford handbook of intergenerational ethics*. Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780190881931.013.9>

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