

Investigation of the Wisdom of Older Adults to Live in Harmony With Nature

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Abstract

Environmental destruction is progressing rapidly around the world, including in Japan. What familiar social groups should we refer to when we aim for a symbiosis between nature and humans? We believe that one of the appropriate social groups is older adults. They have developed a wide range of wisdom for living through the utilization of nature's benefits and countermeasures against nature's threats. Examples are agriculture that does not harvest more than necessary and traditional wooden houses with good ventilation. These pearls of wisdom have contributed greatly to the development of Japan's agriculture, forestry, and fisheries industries. In this study, a wide range of wisdom for living in harmony with nature (how to utilize nature's benefits and countermeasures against nature's threats) was investigated among older Japanese participants ($N = 218$, mean age = 73.04 years). An online survey was conducted, and participants responded in an open-ended format. A qualitative analysis was conducted to examine in detail which responses were frequent. As a result, specific examples of utilizing nature's benefits included the management of fields by pest-eating animals. Specific examples of countermeasures against nature's threats included wrapping towels around water pipes to withstand the winter cold. Meanwhile, older participants had a very favorable view of passing on the wisdom of living in harmony with nature to generations younger than themselves. The data from the open-ended survey of many older adults is of high material value and will be useful for improving the policies for supporting older adults.

Keywords: Older Adults, Nature, Wisdom, Qualitative Research

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Introduction

Environmental destruction is progressing rapidly around the world, including in Japan. With the rapid progression of global warming, the threat posed by natural disasters is very great for all humans. Japanese people, in particular, have frequently suffered from natural disasters such as earthquakes, tsunamis, typhoons, and floods. In light of the above, it is extremely important to take advantage of the benefits of nature and to take adequate measures against nature's threats (Hasegawa, 2012).

What kind of people are the social groups to which we should refer when we aim for a symbiosis between nature and humans? One of the social groups is older adults who have many opportunities to live in harmony with nature. Older people have long developed a wide range of life wisdom through the utilization of nature's benefits and countermeasures against nature's threats. Agriculture that does not harvest more than necessary, traditional wooden houses with good ventilation, and local cuisine that makes the most of edible parts are just a few examples. These pearls of wisdom have contributed greatly to the development of Japan's agriculture, forestry, and fisheries industries.

In recent years, efforts have been made to link the wisdom of such older people to the revitalization of the rural community. For example, in Higashi-Shirakawa Village, Gifu Prefecture, Japan, farmers have implemented activities such as providing vegetables that cannot be shipped to market for school lunches (The Japan Foundation for Aging and Health, 2019). Such activities are also very meaningful in terms of promoting social participation among older adults (Turcotte, Carrier, Roy, & Levasseur, 2018).

In light of the above, this study will survey and organize a wide range of wisdom developed through the utilization of nature's benefits and countermeasures against nature's threats, with Japanese older adults as the target population. Currently, depopulation in many rural and fishing villages in Japan is rapidly progressing, and the lack of bearers in the agriculture, forestry, and fishery industries has become a serious social problem (Miyata & Wakamatsu, 2019; Yoshida, Katsuki, & Yoshikawa, 2014). The discontinuation of the transmission of the wisdom of older adults, which has been passed down from generation to generation in the rural community, would be a great loss to society as a whole. Therefore, this research, which will document a wide range of the above-mentioned wisdom, is of great academic significance to fields such as cultural anthropology and sociology.

Older adults who participate in this study also have the advantage of being able to pass on their own wisdom to younger people. This could have a secondary effect of increasing the self-efficacy of older adults (Ardelt & Jeste, 2018), which is desirable from a gerontological perspective. Thus, the study will also examine how older participants feel about passing on the wisdom of living in harmony with nature to young people.

Methods

Participants

A total of 218 Japanese older adults (aged 65-85) participated in this survey. The mean age of the participants was 73.04 ($SD = 5.07$); 104 males and 114 females. Participants were recruited through Intage Inc., Japan's leading research firm. The contents of the study were explained at the beginning of the survey and it was clearly stated that non-participation in the

survey would not result in any disadvantage. Informed consent was obtained as described above.

Measurements

Participants were asked about the two questions: (1) “Please feel free to answer the ways to take advantage of nature’s benefits that you know or practice (e.g., farming without harvesting more than necessary). Any description is acceptable,” and (2) “Please feel free to answer the ways to cope with nature’s threats that you know or practice (e.g., countermeasures against snow accumulation in areas with heavy snowfall). Any description is acceptable.” No time limit or word limit was set for responses.

We also asked about the participants’ perception of passing on their knowledge and experience of co-existence with nature to the younger generation. Questionnaire items were “feeling good,” “important,” “meaningful,” “useless (reversed item),” “feeling a sense of self-affirmation,” “enjoyable,” and “comfortable.” Participants responded to these items using a six-point Likert scale ranging from “1. not at all agree” to “6. very much agree.” Mean scores were calculated ($\alpha = .79$), and higher scores indicated a more positive perception of passing on their knowledge and experience.

Demographic items included participants’ age, gender, current residence (prefecture), longest residence in life (prefecture), cohabitation, work status, and subjective wealth. Cohabitation was measured by the single item (answer: yes or no), “Do you currently live alone?” Work status was measured by the single item (answer: yes or no), “Do you currently have a job?” Subjective wealth was measured by the single item (seven-point Likert scale), “How do you feel about the current economic aspects of your life?”

Procedure and Analysis

All procedures were conducted online in September 2022. Participants agreed to participate in the study after being briefed on its content. Participants were asked two questions about the utilization of nature’s benefits and countermeasures against nature’s threats. The order of these questions was counterbalanced. Then, participants were asked about the perception of passing on their knowledge and experience of co-existence with nature to the younger generation. Finally, participants answered the items on the demographics.

The statistical software R (ver. 4.2.0) was used for the analysis. Regarding the two questions of the utilization of nature’s benefits and countermeasures against nature’s threats, we used the R package of RMeCab (Ishida & Kudo, 2022). Text mining was conducted to capture overall trends in open-ended data (Higuchi, 2017). The R codes and data used in the analysis were posted on the Open Science Framework (OSF) repository (https://osf.io/3h9dy/?view_only=446dc1ae8ef440fb9944b5572e54af75).

Results

Table 1 shows where the participants lived and where they resided the longest in their lives (prefectures). The total number of words used in the answer to the utilization of nature’s benefits was $N = 3590$, and in the answer of the countermeasures against nature’s threats was $N = 3663$. In this study, we calculated and referred to the term frequency-inverse document frequency (TF-IDF). The details of TF-IDF can be seen in Aizawa (2003). If the TF-IDF

value is higher, the word is more characteristic in the text (Ogiso, Komachi, & Matsumoto, 2013). A list of TF-IDFs (top seven each) is provided in Table 2 (see OSF for each participant's responses).

Table 1. Each number of participants' current residence and longest residence in life.

prefecture	current	in life	prefecture	current	in life
Hokkaido	10	10	Shiga	0	0
Aomori	2	2	Kyoto	3	5
Iwate	2	2	Osaka	23	24
Miyagi	4	4	Hyogo	12	12
Akita	1	1	Nara	4	4
Yamagata	2	2	Wakayama	1	1
Fukushima	4	4	Tottori	0	0
Ibaraki	4	5	Shimane	0	0
Tochigi	0	0	Okayama	1	1
Gunma	2	1	Hiroshima	7	7
Saitama	6	6	Yamaguchi	2	2
Chiba	11	9	Tokushima	6	5
Tokyo	26	29	Kagawa	6	6
Kanagawa	21	21	Ehime	3	3
Niigata	2	2	Kochi	0	0
Toyama	2	2	Fukuoka	5	5
Ishikawa	1	1	Saga	0	0
Fukui	1	1	Nagasaki	1	1
Yamanashi	1	0	Kumamoto	3	3
Nagano	5	5	Oita	1	0
Gifu	4	3	Miyazaki	4	4
Shizuoka	7	8	Kagoshima	2	2
Aichi	11	11	Okinawa	2	1
Mie	3	3	Total (N)	218	218

Table 2. TF-IDFs for each item.

order	utilization of nature's benefits		countermeasures against nature's threats	
	words	TF-IDF	words	TF-IDF
1	power generation	80	typhoon	90
2	sunlight	54	countermeasure	71
3	plantation	34	earthquake	62
4	vegetable	34	disaster	44
5	family	32	nature	20
6	nature	32	house	13
7	utilization	22	time	13

As for the item of the utilization of nature's benefits, many of the descriptions were related to solar power generation and home gardens. Specifically, we found some answers such that "incorporating solar power into homes," and "becoming self-sufficient through a vegetable garden." Some participants also stated that they would reduce the use of pesticides, and release car ducks and ducklings in the rice paddies, which eat pests.

As for the item of the countermeasures against nature's threats, many of the descriptions were related to typhoons and earthquakes. Specifically, we found some answers such that

“weeding and cleaning of drainage ditches in front of their homes in response to typhoons and heavy rains,” and “preparing emergency food against earthquakes.” Some participants also stated that they would wrap a towel around the water pipe before it gets cold in preparation for winter.

Regarding the participants’ perception of passing on their knowledge and experience of co-existence with nature to the younger generation, the mean scores of the seven items were $M = 4.29$ ($SD = 0.76$). A one-group t -test was conducted comparing this value to the midpoint of the six-point Likert scale (i.e., 3.5). As a result, participants’ perceptions were significantly more positive than the midpoint ($t(217) = 15.32, p < .001, d = 1.04$).

Discussion

In this study, we investigated a wide range of wisdom developed through the utilization of nature’s benefits and countermeasures against nature’s threats, with Japanese older participants. We found that the participants had a very wide variety of “ways of living with nature.” It was also clear that older adults viewed favorably informing the younger generation of the methods to live in harmony with nature.

Older adults may be superior to other generations in terms of having the wisdom to live in harmony with nature. Informing other generations about this characteristic would help to affirm their negative attitudes toward older adults. Prejudice and discrimination against older adults are important social issues, along with prejudice and discrimination based on race and gender (Ayalon et al., 2019; Shimizu, Hashimoto, & Karasawa, 2022), and negative attitudes such as older adults being “stubborn” are widespread and common (North & Fiske, 2013). Such negative attitudes have undesirable impacts on the well-being of older adults and should be improved (Kornadt, Albert, Hoffmann, Murdock, & Nell, 2021; Shimizu, 2021). Strategies to translate our findings into improvements in ageism will need to be explored in more detail.

We found such findings described above, but there are two major limitations of this study. First, the qualitative analysis was inadequate. Additional analysis would be needed to determine if responses differ based on the age and gender of the participants. It will also be necessary to look at some other values than TF-IDF to get a broader picture of the trends in the data. Second, the participants are disproportionately located in large cities (e.g., Tokyo, Osaka, and Kanagawa; see Table 1). Older people who have particular wisdom to live in harmony with nature are thought to reside in rural areas. Therefore, it would be necessary to conduct a similar survey with a larger sample of older adults living in the suburbs.

Conclusion

As described in the Introduction, it is important to take advantage of nature’s benefits and to take measures against nature’s threats. In doing so, there is a great deal to be learned from the extensive wisdom of older adults. In this study, the wisdom of older adults regarding living in harmony with nature was organized and made public as a data set. We consider this to be of high material value in gerontological and psychological research. We hope that the findings of this study will be applied to create a world in which older adults can live actively.

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