

## Relationship between Disease Avoidance and Attitudes toward Older People

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**Abstract**—Negative attitudes toward older people persist, leading to the neglect and marginalization of older adults' will. The social group of older people is often perceived as being overly associated with disease, and disease avoidance is related to negative attitudes. Meanwhile, people with higher disease avoidance tend to avoid others, not just older adults. Therefore, whether disease avoidance and attitudes toward older people have a significant relationship should be examined, even after controlling for attitudes toward general others (i.e., younger people) and other personality determinants of social interactions (i.e., extroversion, general trust). We conducted an online survey of Japanese participants ( $n = 962$ ). The results showed that the relationship between higher disease avoidance and ageist attitudes was significant, even after controlling for the above variables. Psychological interventions that weaken the cognitive link between older adults and disease would effectively reduce ageism. The limitations and future directions of this study are discussed.

**Keywords:** disease avoidance, negative attitudes, older adults, extroversion, general trust

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### INTRODUCTION

The world's population is aging remarkably, with the proportion of people aged 65 and over expected to reach 17.8% by 2060 [28]. This trend is particularly pronounced in Japan, where people aged 65 years and over accounted for 29.1% of the total population in 2021 [14]. In this aging society, attitudes toward older adults remain negative [5, 11], leading to disregard and marginalization [22]. Therefore, it is important to clarify the factors related to negative attitudes toward the old held by other generations.

This study focused on disease avoidance as a factor associated with negative attitudes. Disease avoidance refers to feelings of disgust and discomfort that people develop in response to the disease to protect themselves from it [19]. We conducted an online survey of Japanese participants and found that those with higher disease avoidance had more negative attitudes toward the old. Furthermore, we showed that this relationship is still pronounced even after controlling for variables related to attitudes toward general others and personality. With the COVID-19 pandemic, many people worldwide are becoming more sensitive to disease transmission [2]. A detailed study of the relationship between disease avoidance and ageist attitudes will provide valuable insights for future gerontological and psychological research to reduce ageism, particularly in post COVID-19 societies. The following section

reviews previous studies on disease avoidance and ageist attitudes.

### DISEASE AVOIDANCE AND ATTITUDES TOWARD OLDER PEOPLE

People are likely to avoid a person with illness-like cues, regardless of whether the person has a disease [23]. In particular, it has been reported that the social groups of older adults are often overly perceived to be associated with disease and are likely to be avoided by other generations [15, 27]. This tendency may be more pronounced during the COVID-19 pandemic. Therefore, there is an urgent need to consider disease avoidance when examining attitudes toward the old. Specifically, people with higher disease avoidance have more negative attitudes toward older adults.

In the meantime, those with higher disease avoidance tend to avoid others in general, not just older people, to avoid disease transmission from others and proximity to morbid cues [24]. It has also been shown that an experimental manipulation that intensifies the perceived threat of disease increases the participants' aversive responses to others' face photographs [18]. Thus, even if there is a significant relationship between disease avoidance and ageist attitudes, the relationship may only be a spurious correlation reflecting negative attitudes toward general others by people with higher

disease avoidance. In this case, the significance of addressing disease avoidance in gerontological and psychological research aimed at reducing ageism would be diminished. Therefore, we should examine whether disease avoidance is significantly related to attitudes toward the old, even after considering aversive responses to people in a different age group (i.e., younger generation) and controlling for variables related to attitudes and personality.

As such control variables, we focus on extroversion (a degree of sociability and activity) and general trust (trust in general others). Specifically, people with higher disease avoidance have been reported to have lower extroversion [9] and lower general trust [1]. Extroversion and general trust have also been strongly associated with approaching/avoiding behaviors toward general others [6, 30]. If there is still a significant relationship between disease avoidance and ageist attitudes, even after controlling for the above variables, we can emphasize the importance of focusing on disease avoidance in gerontological and psychological studies aimed at reducing ageism.

## HYPOTHESES

In this study, we tested the following hypotheses: (1) people with higher disease avoidance hold more negative attitudes toward older people, and (2) even after controlling for attitudes toward young people, extroversion, and general trust, we still find a relationship in which those with higher disease avoidance hold more negative attitudes toward older people.

## MATERIALS AND METHODS

### *Participants*

A power analysis was conducted ( $\alpha = 0.05$ ,  $\beta = 0.80$ ,  $N_{\text{parameter}} = 9$ ,  $f^2 = 0.02$ ) [7], and the required sample size was 781. We recruited 962 Japanese participants (aged 18–64 years) using the crowdsourcing service CrowdWorks, with the largest number of registered users in Japan [8]. The mean age of the participants was 39.85 years ( $SD = 10.41$ ), and the participants were 367 men and 595 women.

### *Measurements*

*Attitudes toward older people:* We measured attitudes toward older people using five semantic differential scales (seven-point Likert scale, including each scale) [17]. We calculated mean scores ( $\alpha = 0.91$ ), with higher scores indicating more negative attitudes. We referred to the definition by the Japan Cabinet Office and treated people aged 65 and over as older adults [13].

*Disease avoidance:* We measured disease avoidance using the Japanese Perceived Vulnerability to Disease Scale [10], whose reliability and validity were assured by the data collected from participants in the Nether-

lands and Canada [9], consisting of two sub-categories: perceived infectability and germ aversion. We used germ aversion, which corresponds to disease avoidance in this study and consists of eight items. We calculated the mean scores ( $\alpha = 0.77$ ), with higher scores indicating increased disease avoidance.

*Attitudes toward young people:* We measured attitudes toward young people using the same five semantic differential scales as the items on attitudes toward older people [17]. We calculated mean scores ( $\alpha = 0.89$ ), with higher scores indicating more negative attitudes. This study defined young people (the social group relative to older adults aged 65 and over) as people aged 20 to 40 years, following a previous study [25].

*Extroversion:* We measured extroversion using two items of the Japanese version of the Ten-Item Personality Inventory [20]. We calculated the mean scores ( $r = 0.56$ ,  $p < 0.001$ ), with higher scores indicating increased extroversion.

*General trust:* General trust was measured using six items [29]. We calculated the mean scores ( $\alpha = 0.88$ ), with higher scores indicating an increased general trust.

*Demographics:* We measured the participants' contact experiences with older adults, age, gender, and nationality. We distinguished between the quantitative and qualitative aspects of contact experience following previous research [4]. The quantitative aspect was measured using a single item, with higher scores indicating a greater contact experience. Two items measured the qualitative aspect, and we calculated mean scores ( $r = 0.79$ ,  $p < 0.001$ ), with higher scores indicating a higher quality of contact experience.

### *Procedure and Analysis*

This survey was conducted online. Participants agreed to participate and then responded to the items on attitudes toward older people, disease avoidance, attitudes toward young people, extroversion, general trust, and demographics. We conducted an analysis using R software (ver. 4.1.0). The scale items, data used in the analysis, and R script were posted on the Open Science Framework (OSF) repository (<https://osf.io/pmjcd/>).

## RESULTS AND DISCUSSION

### *Data Screening and Summary Statistics*

We excluded participants ( $n = 16$ ) who mistakenly answered the item, "For this question, please choose the second answer from the right." After screening, the data used in the analysis were  $n = 946$  (aged 18–64 years old). The mean age of the participants was 39.90 years ( $SD = 10.40$ ), and the participants were 357 men and 589 women. The means, standard deviations, and correlation coefficients for each indicator

**Table 1.** The means, standard deviations, and correlation coefficients for each indicator

		<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1	Att. to older	3.61	1.08	—						
2	Dis. avoidance	4.57	0.99	0.12**	—					
3	Att. to young	3.53	0.92	0.47**	0.15**	—				
4	Extroversion	3.23	1.37	−0.17**	0.00	−0.17**	—			
5	General trust	4.07	1.03	−0.29**	−0.17**	−0.32**	0.11**	—		
6	Con. (quantity)	3.93	1.85	−0.15**	0.04	−0.04	0.09**	0.08*	—	
7	Con. (quality)	4.66	1.08	−0.60**	−0.06	−0.28**	0.16**	0.32**	0.32**	—
8	Age	39.90	10.40	−0.14**	0.10**	−0.03	0.08*	0.16**	0.22**	0.13**

att: attitudes; dis: disease; con: contact; \*  $p < 0.05$ ; \*\*  $p < 0.01$ .

**Table 2.** Multiple regression analysis results

	$\beta$	95%CI	VIF
Disease avoidance	0.05*	[0.00, 0.10]	1.11
Attitudes toward young	0.31**	[0.26, 0.36]	1.23
Extroversion	−0.04	[−0.08, 0.01]	1.05
General trust	0.00	[−0.06, 0.05]	1.24
Contact (quantity)	0.05	[0.00, 0.10]	1.17
Contact (quality)	−0.51**	[−0.56, −0.45]	1.30
Age	−0.08**	[−0.13, −0.03]	1.10
Gender	0.02	[−0.03, 0.07]	1.08
Adjusted $R^2$	0.47**	[0.42, 0.51]	—

Regression coefficients were standardized. Gender: males were assigned a score of 1, whereas females were given a score of 0; \*  $p < 0.05$ ; \*\*  $p < 0.01$ .

are listed in Table 1. It was also confirmed that no ceiling or floor effects occurred (see the OSF).

### Hypothesis Testing

The higher the level of disease avoidance, the more negative the attitudes toward older people ( $r = 0.12$ , 95% CI = [0.06, 0.18],  $p < 0.001$ ); thus, Hypothesis 1 was supported. We also conducted a multiple regression analysis with attitudes toward older people as the dependent variable and disease avoidance, attitudes toward young people, extroversion, general trust, contact experience, age, and gender as the independent variables (Table 2). The results showed that disease avoidance had a pronounced effect on ageist attitudes ( $\beta = 0.05$ , 95% CI = [0.00, 0.10],  $p = 0.03$ ), supporting Hypothesis 2. There was a correlation between higher extroversion/general trust and weaker negative attitudes toward the old (see Table 1), but this relationship disappeared in the multiple regression analysis (see Table 2). When the data of all participants were analyzed without screening, the results were not significantly different from those reported above (see the OSF).

In this study, we conducted an online survey of Japanese participants to examine the relationship

between disease avoidance and negative attitudes toward older adults. The results showed that the higher the disease avoidance, the more negative the attitude toward older people. This relationship remained remarkable even after controlling for attitudes toward young people, extroversion, and general trust. One reason for this result is that older adults are more likely than other social groups to be associated with disease [15, 27]. Since people tend to avoid those with illness-like cues [23], the degree of disease avoidance and negative attitudes toward older adults may still have been associated even after controlling for the above variables.

Why does disease avoidance affect attitudes toward older adults? One potential factor would be perceived threat of death. Previous studies have reported that people who are more susceptible to death are likely to have higher disease avoidance and tend to avoid targets related to death [9]. It has also been reported that older adults are often perceived to be associated with death [21]. Accordingly, the perceived threat of death may strengthen the degree of disease avoidance, resulting in more negative attitudes toward older adults. This process should be empirically examined in future studies.

A previous study [11] reviewed three factors that can strengthen ageist attitudes: specifically, these are less frequent contact with the old [12], lack of knowledge about aging [16], and low life satisfaction and high anxiety about life in old age [21]. Although the relationship between these factors and ageist attitudes has been shown empirically [11], disease avoidance is qualitatively different from any of these factors. In this study, we controlled contact experience with the old; however, future studies should examine the relationship between disease avoidance and ageist attitudes in more detail, controlling for knowledge of aging, life satisfaction, and anxiety about life in old age.

### Limitation

Despite the above findings, a limitation of this study is that we did not measure participants' attitudes toward COVID-19. In November 2021, when this survey was conducted, the rate of country-wide COVID-19 infections had been relatively low in Japan; however, many social activities were still restricted at the time and the fear of infection strongly prevailed among the Japanese people. Attitudes toward COVID-19 are likely to influence the extent of the cognitive link between older adults and disease. Therefore, a detailed study of the relationship between disease avoidance and ageist attitudes is required, considering the influence of attitudes toward COVID-19 [3].

### CONCLUSIONS

We believe that our findings are meaningful for affirming ageist attitudes in the future. For example, psychological interventions that weaken the cognitive link between older adults and disease, which persists in many people [15, 27], may be effective. Since the social group of older adults is one to which most people will belong, it has been suggested that the subjective perceptions of "how long it will be before I become an older person" are related to the level of ageism [26]. Based on this suggestion and our findings, subjective perceptions such as "how sickly I become when I get older" and "how likely I am to become bedridden in the future" may also influence ageist attitudes. Thus, future gerontological and psychological studies are needed to extensively examine the relationship between disease avoidance and attitudes toward older people.

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### COMPLIANCE WITH ETHICAL STANDARDS

The authors declare that they have no conflicts of interest.

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants involved in the study.

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