

# The relationship between temperament of conformity, the belief in a just world, and the practice of COVID-19 countermeasures in Japan

Kazuhisa NAGAYA Department of Psychology, Kobe Gakuin University

The purpose of this study was to examine the impact of individuals' conformity and belief in a just world (BJW) on their practice of countermeasures against the novel coronavirus disease (COVID-19) in Japan. Between April and May 2021, a survey was conducted with students attending a university in Hyogo Prefecture, where COVID-19 was re-emerging. The results of the analysis showed that countermeasures that were easy to assimilate (i.e., wearing masks) were positively and significantly associated with conformity, while countermeasures that were difficult to assimilate (e.g., personally collecting COVID-19-related information) were not associated with conformity. Conversely, there was no relationship between individuals' BJW and their engagement in countermeasures, except for the intention to vaccinate; contrary to an initial prediction, a significant negative correlation was found between these variables among male participants. The reasons for this unexpected finding are discussed, along with the implications of this study's other findings.

**Keywords:** conformity, belief in a just world, countermeasures, COVID-19, intention to vaccinate

Kobe Gakuin University Journal of Psychology  
2021, Vol.4, No.1, pp.23-30

## 1. Introduction

The novel coronavirus (i.e., SARS-CoV-2, which causes the coronavirus disease 2019 [COVID-19]) pandemic has forced individuals to make major changes in their lifestyle. As a result of COVID-19 containment measures, not only has it become more difficult to travel abroad, people worldwide have also been restricted from leaving their homes for non-essential reasons. These unprecedented circumstances have caused individuals to adopt new behaviors, such as wearing masks even when going out for short periods of time, avoiding crowds, and maintaining social distancing in public spaces. The adoption of these countermeasures by all individuals is expected to reduce the spread of the disease and facilitate their return to a pre-COVID-19 lifestyle.

However, the aforementioned countermeasures constrain people's freedom to a certain degree. Thus, it is important to identify the psychological factors that enable people to actively accept such inconveniences, as the dissemination

of persuasive messages (the effectivity of which is determined by said factors) could encourage more people to engage in COVID-19 countermeasures. Based on prior studies on the impact of COVID-19 in Japan, this study aimed to examine whether individuals' tendency toward conformity and their belief in a just world (BJW) could lead them to engage in COVID-19 countermeasures.

In Japan, individuals' tendency toward conformity was the underlying cause of countermeasures against COVID-19 from the early stages of the pandemic. Although the World Health Organization did not actively encourage healthy individuals to wear masks in the early stages of the outbreak (BBC, 2020), Nakayachi, Ozaki, Shibata, and Yokoi (2020) found that Japanese people's high mask-wearing rate was due to their tendency to conform to social norms. In other words, the higher the tendency toward conformity, the higher the rate of mask-wearing behavior (see also Sakakibara & Ozono, in press for a recent replication). In addition, Nakayachi, Ozaki, Shibata, and Yokoi (in press) also reported that

conformity had been a crucial factor that promoted hand-washing behavior during COVID-19 pandemic. These findings indicate that individuals' conformity influenced the practice of COVID-19 countermeasures. The abovementioned studies examined said influence using items directly related to specific preventive behaviors (e.g., "When you see other people wearing masks, do you think that you should also be wearing a mask?"). Conformity can be considered as a situation-dependent or situation-independent trait. Therefore, it can be said that prior studies have primarily focused on situation-dependent conformity, since they examined the relationship between conformity and COVID-19 countermeasure behaviors under specific circumstances. If solely situation-dependent conformity leads to individuals' engagement in COVID-19 countermeasures, the association between conformity and COVID-19 countermeasure behaviors will be limited to the situations presented in the aforementioned studies. Conversely, if an association can be found between situation-independent conformity (i.e., a temperament of conformity) and COVID-19 countermeasures, this would suggest there is a cross-situational association between conformity and COVID-19 countermeasures. Therefore, it is necessary to examine whether an individual's general temperament of conformity leads to an increase in the effectivity of COVID-19 containment measures.

In addition, studies on descriptive norms brought about by the majority have pointed out that although such norms lead to eco-friendly behaviors and countermeasure behaviors against natural disasters, those behavioral changes are often passive and do not entail changes in attitude or behavioral intention (Ohtomo & Hirose, 2007a; Ozaki & Nakayachi, 2015). For example, a study on precautionary behavior toward earthquakes showed that descriptive norms were only associated with specific behaviors (e.g., storing food to prepare for earthquakes), but they did not influence participants' attitude or behavioral intention (Ozaki & Nakayachi, 2015). Thus, the behaviors elicited by conformity seemed to be based on a superficial acceptance of assimilable behaviors, rather than on a deliberate decision-making process with an underlying understanding of the significance of those behaviors (Ohtomo & Hirose, 2007a; 2007b). Accordingly, it is possible that behavioral changes caused by descriptive norms are limited to behaviors that can be easily assimilated, as such changes are not rooted in individuals' awareness of the importance of those behaviors. In other words, an individual's conformity is expected to promote countermeasures only when they encompass behaviors that are easy to assimilate, such as wearing masks. Conversely, conformity does not seem to promote countermeasures that imply behaviors that are difficult to assimilate. For

example, countermeasures that imply behaviors that may be difficult to assimilate include personally collecting information on COVID-19 (e.g., keeping track of the average number of cases per day). Although such behaviors are essential for an accurate assessment of the impact of COVID-19 and the selection of effective countermeasures, it is unlikely that individuals' conformity would promote such behaviors because they are less assimilable.

The findings of the focus theory of normative conduct should be mentioned for supporting this study's predictions. Focus theory, which examines the influence of descriptive and injunctive norms on behavior, indicates that behavioral changes resulting from descriptive norms are more likely to occur when the behaviors in question are salient or easily identified, as when the individual sees others performing such behaviors (Cialdini, Reno, & Kallgren, 1990). Accordingly, it is reasonable to assume that individuals' tendency toward conformity enhances mask-wearing behavior due to its high assimilability, but has a limited effect on behaviors with low assimilability (those that are less noticeable).

Studies conducted during the COVID-19 pandemic have also suggested that, similar to conformity, individuals' degree of BJW may be related to their engagement in infection-preventive behaviors in Japan. As its name implies, the BJW assumes that society is fair and people experience the consequences they deserve (Lerner, 1980); in other words, it presumes that individuals who do good deeds will be rewarded, and those who do evil deeds will be punished (Maes & Schmitt, 1999). Previous studies have shown that individuals with a strong BJW are more likely to behave in accordance with social norms (Wolfradt & Dalbert, 2003) and engage in prosocial behaviors (Bartholomaeus & Strelan, 2019), while they are less likely to tolerate socially undesirable behaviors, such as norm violations and delinquency (Denke, Rotte, Heinze, & Schaefer, 2014; Sutton & Winnard, 2007), and suppress inappropriate expression of anger in driving contexts (Nesbit, Blankenship, & Murray, 2012).

A cross-national study pointed out that the belief that the COVID-19 infection was self-inflicted (based on the BJW) was much higher among the Japanese population than in Western countries or China (Miura, Hiraishi, Nakanishi, & Ortolani, 2020). It has also been argued that criticism toward people who suffered from COVID-19 and those who do not comply with social norms might be due to individuals' BJW (Murayama, 2020). In line with these findings, it is possible to predict that the BJW and conformity are factors that lead to normative behavior, thus helping facilitate the practice of COVID-19 countermeasures.

Therefore, this study examined the relationship between

general conformity, the BJW, and individuals' practice of COVID-19 countermeasures. The following behaviors were examined in this study: wearing a mask, avoiding close contact with others, obtaining information related to COVID-19, and intention to get vaccinated. Among these items, wearing a mask is considered an easily assimilable behavior because it is easy to identify whether others are wearing masks by simply looking at them. Conversely, personally collecting information about COVID-19 is assumed to be a behavior that is less assimilable. The specific hypotheses of this study are as follows.

Hypothesis 1: Temperament of conformity is positively correlated with wearing a mask.

Hypothesis 2: Temperament of conformity is not correlated with personally collecting information about COVID-19.

Hypothesis 3: The BJW is positively correlated with the practice of countermeasures.

## 2. Materials and Methods

### 2.1 Participants

This study recruited undergraduate students attending a private university in Kobe City, Hyogo Prefecture, Japan. University students were targeted for the survey because young people are often unaware that they have been infected (due to their relatively stronger immune system), thereby posing a greater threat to people who are at high risk of serious illness, which warrants the practice of focused countermeasures (Japanese Ministry of Health, Labour and Welfare, 2021).

A study that examined the correlation between personality (according to the Big Five traits) and COVID-19 countermeasures found a weak correlation between personality and countermeasures ( $|rs| < .20$ ) (Aschwanden et al., 2021). Based on this precedent, in the present study, a power analysis was conducted to determine the sample size. The statistical power of the test was set at 80%, significance level at 5%, and expected correlation coefficient at .20. The power analysis (two-tailed) revealed that a minimum sample size of 191 participants was necessary. To achieve this sample size, 206 participants were recruited, and their data were collected. Of these, 10 participants who failed to respond to at least one of the items were excluded from the analysis, resulting in 196 participants (52.04% female;  $M_{age} = 19.08$ ,  $SD_{age} = 0.69$ ) being included in the analysis.

### 2.2 Study Period

This study was conducted from April 12 to May 7, 2021.

Around this time, there was a resurgence of COVID-19 cases in the Kansai region of Japan, including Hyogo Prefecture. As a result, stricter COVID-19 measures were implemented in the prefectures of Osaka, Hyogo, and Miyagi for the first time in Japan on April 5, 2021 (Japan Times, 2021). Afterward, a third emergency declaration was issued for the area, including Hyogo Prefecture, on April 25, 2021. Thus, this study was conducted at the time of the reemergence of COVID-19, targeting university students located in the affected area.

## 2.3 Measures

### 2.3.1 Conformity and BJW Measures

The Japanese version of the Conformity Scale by Yokota and Nakanishi (2011), which was translated from Mehrabian and Steff's (1995) scale, was used to measure participants' tendency toward conformity. The Conformity Scale consists of 11 items measuring the degree to which people agree with the opinions of others in their daily lives, including items such as "Basically, my friends are the ones who decide what we do together." This scale is meant to measure the extent to which people tend to follow the ideas, values, and behaviors of others.

To measure the participants' BJW, eight items from the Japanese version of the BJW scale by Murayama and Miura (2015), which was translated from Maes and Schmitt's (1999) scale, were used. These items are related to the belief in ultimate or immanent justice, which is associated with the tendency to believe that consequences are self-inflicted, as well as with the perception of equity, including beliefs such as "Those who have suffered will be compensated one day."

Both the conformity and BJW scales were scored on a 5-point Likert scale (1 = *not at all* to 5 = *very much*). The conformity ( $\alpha = .70$ ) and BJW scales ( $\alpha = .89$ ) were found to have acceptable internal consistency, so each item was averaged and used in the analysis.

### 2.3.2 COVID-19 Countermeasures

The following preventive behaviors against COVID-19 were examined: wearing a mask, avoiding close contact with others, collecting COVID-19-related information, and intention to get vaccinated. The responses to each countermeasure were scored on a 5-point Likert scale (1 = *not at all* to 5 = *very much*). The tendency to wear a mask was assessed using four items: "I wear a mask even when I go out for 10 minutes or less," "I often wear a mask at home," "I feel uneasy if I do not wear a mask when I have a conversation with others," and "I always wear a mask when I use public transportation." The tendency to avoid close contact with others was assessed using two items: "I

try to keep a distance of at least 1 meter when talking with friends” and “When I go out, I try to avoid places where people gather.” Information collection was assessed using two items: “I try to collect information about COVID-19 infection status” and “To some extent, I know how many people are currently infected with COVID-19 in Japan.” Further, the respondents were also asked about their intention to get vaccinated against COVID-19. Vaccination intention was assessed using two items: “If I have the opportunity to be vaccinated, I will take it” and “I plan to get vaccinated (or have already been vaccinated).” Since acceptable internal consistency was observed for wearing a mask ( $\alpha = .50$ ),<sup>1</sup> avoiding close contact with others ( $\alpha = .56$ ), collecting information ( $\alpha = .80$ ), and intention to get vaccinated ( $\alpha = .74$ ), the items were averaged and used in the analysis.<sup>2</sup>

## 2.4 Procedure

Survey recruitment was conducted during class hours in the university. Participants were asked to complete the questionnaire by scanning a QR code on their smartphones. The survey form was created via Google Form, while the sections were organized in the following order: gender, age, conformity, BJW, COVID-19 countermeasures (except for vaccination intention), and vaccination intention. The

order of the items within each category was randomized for each participant. An informative message about vaccination was presented before asking respondents about their vaccination intention, wherein the possible risks associated with vaccination were clearly indicated. The message stated the following: “Vaccines are being developed to combat the new coronavirus, which is spreading rapidly around the world. Most of the vaccines that have been developed have proven to be safe, but there is still the possibility of unexpected side effects.” All participants indicated their vaccination intention after reading this message.

## 2.5 Ethical Considerations

This study was conducted after receiving approval from the ethical research review board of Kobe Gakuin University (Approval Number: SP20-27). Candidates were briefed (both verbally and in writing) on the purpose of the study, the method of answering the questions, and the handling of personal information at the time of recruitment. Only university students who agreed to participate responded to the survey items.

## 2.6 Statistical Analysis

All the data analyses were conducted using R version 3.6.1 software (R Core Team, 2019). The zero-order correlation coefficients among the variables of conformity, BJW, and COVID-19 countermeasures were calculated to identify the correlations among them.

## 3. Results

Table 1 shows the descriptive statistics and zero-order correlation coefficients for age, gender, conformity, the BJW, and COVID-19 countermeasures. The analysis showed significant correlations between conformity and mask-wearing scores, while no significant associations were observed between conformity and avoiding close contact with others, information collection, and

- 1 Although the mask-wearing score comprised four items, its internal consistency was not high. Therefore, two items (i.e., “I wear a mask even when I go out for 10 minutes or less” and “I always wear a mask when I use public transportation”) that showed high correlation ( $r = .61$ ) were analyzed as a “two-item mask-wearing score,” which showed results consistent with those of the main analysis in the significance tests.
- 2 In addition to these items, participants were asked about how obligated they felt to comply with social distancing norms and vaccination, and their anxiety about getting vaccinated. Participants were also asked about descriptive norms on vaccination. These items were not included in the analysis because they were not directly related to the hypotheses of this study.

Table 1 Descriptive statistics and correlations ( $N = 196$ )

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Age	19.08	0.69	—						
2. Gender (Female = 1, Male = 2)	—	—	.057	—					
3. Conformity	3.28	0.53	.088	-.063	—				
4. BJW	3.16	0.94	-.133 <sup>†</sup>	-.232 <sup>**</sup>	-.125 <sup>†</sup>	—			
5. Wearing a mask	3.66	0.59	-.104	-.086	.244 <sup>**</sup>	-.094	—		
6. Avoiding close contact with others	3.07	0.92	-.110	-.049	-.061	.074	.428 <sup>**</sup>	—	
7. Collecting information	3.40	1.08	.031	-.065	.002	-.019	.335 <sup>**</sup>	.416 <sup>**</sup>	—
8. Intention to get vaccinated	3.08	1.21	.135 <sup>†</sup>	.236 <sup>**</sup>	.078	-.326 <sup>**</sup>	.173 <sup>*</sup>	.225 <sup>**</sup>	.174 <sup>*</sup>

Note. <sup>†</sup> $p < .10$ ; <sup>\*</sup> $p < .05$ ; <sup>\*\*</sup> $p < .01$ . BJW = belief in a just world.

vaccination intention. These results supported hypotheses 1 and 2. Conversely, the BJW did not exhibit a significant association with any COVID-19 countermeasure, except for vaccination intention. Thus, hypothesis 3 was not supported. Furthermore, the BJW was significantly negatively correlated with vaccination intention, indicating the opposite of hypothesis 3. The implications of these results are presented in detail in the discussion section.

In order to examine whether these correlations were confirmed regardless of participants' gender, the correlation coefficients between the variables were calculated for each gender (Tables 2 and 3). The results showed that the direction of the correlation was generally consistent between the overall results and the gender-specific results. However, the following differences were also found. For male participants, conformity and the tendency to wear a mask showed a significant positive correlation ( $r = .33, p < .01$ ) as in the analysis of the overall sample ( $r = .24, p < .01$ ). However, for female participants the direction of the correlation was consistent but not significant ( $r = .14, p = .16$ ). More importantly, while the BJW and the tendency to wear a mask were significantly negatively correlated among male participants ( $r = -.28, p < .01$ ), the opposite was true for female participants, showing a marginally significant positive correlation ( $r = .17, p = .09$ ). In addition, the BJW and intention to vaccinate were significantly negatively correlated in both the overall ( $r = -.33, p < .01$ ) and male samples ( $r = -.46, p < .01$ ), but there was no statistically significant correlation for female participants ( $r = -.08, p = .45$ ).

#### 4. Discussion

This study hypothesized that two types of personality factors—conformity and the BJW—would influence Japanese people's tendency to engage in COVID-19 countermeasures. The results of the study showed that the more individuals exhibited a tendency toward conformity, the more likely they were to wear a mask. This result supported hypothesis 1 and was consistent with previous studies conducted in the early stages of the epidemic in Japan (Nakayachi et al., 2020). However, conformity was not associated with the tendency to avoid close contact with others, to collect information, or the intention to get vaccinated. For example, certain countermeasures (such as collecting information privately) seemed to be behaviors difficult to assimilate. Therefore, the results indicate that conformity only promotes COVID-19 countermeasures that are easy to assimilate.

Previous studies on earthquake prevention behaviors have pointed out that information about social norms could only lead to superficial behavioral changes and not attitudinal change (Ozaki & Nakayachi, 2015). In other words, it can be speculated that countermeasure behaviors based on conformity were adopted as a result of individuals' passive acceptance of those behaviors, rather than because they acknowledged the need for such behaviors. Accordingly, in the present study, no association was found for countermeasure behaviors that are less assimilable.

In contrast, participants' degree of BJW was not associated with most COVID-19 countermeasures.

Table 2 Descriptive statistics and correlations for *female* participants ( $n = 102$ )

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Age	19.04	0.70	—					
2. Conformity	3.31	0.55	-.030	—				
3. BJW	3.36	0.83	-.166 <sup>†</sup>	.065	—			
4. Wearing a mask	3.71	0.45	-.168 <sup>†</sup>	.142	.167 <sup>†</sup>	—		
5. Avoiding close contact with others	3.12	0.78	-.126	-.106	.230 <sup>*</sup>	.354 <sup>**</sup>	—	
6. Collecting information	3.47	1.03	.145	.004	.055	.144	.260 <sup>**</sup>	—
7. Intention to get vaccinated	2.81	1.12	.180 <sup>†</sup>	.045	-.075	-.059	.154	.117

Note. <sup>†</sup> $p < .10$ ; <sup>\*</sup> $p < .05$ ; <sup>\*\*</sup> $p < .01$ . BJW = belief in a just world.

Table 3 Descriptive statistics and correlations for *male* participants ( $n = 94$ )

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Age	19.12	0.67	—					
2. Conformity	3.24	0.51	.241 <sup>*</sup>	—				
3. BJW	2.93	1.00	-.086	-.349 <sup>**</sup>	—			
4. Wearing a mask	3.61	0.71	-.055	.328 <sup>**</sup>	-.281 <sup>**</sup>	—		
5. Avoiding close contact with others	3.03	1.06	-.095	-.031	-.045	.464 <sup>**</sup>	—	
6. Collecting information	3.33	1.13	-.080	-.009	-.109	.457 <sup>**</sup>	.529 <sup>**</sup>	—
7. Intention to get vaccinated	3.38	1.23	.069	.151	-.460 <sup>**</sup>	.366 <sup>**</sup>	.312 <sup>**</sup>	.265 <sup>**</sup>

Note. <sup>\*</sup> $p < .05$ ; <sup>\*\*</sup> $p < .01$ . BJW = belief in a just world.

Previous studies have suggested that the BJW can lead to behaviors that are consistent with social norms (Wolfradt & Dalbert, 2003). Furthermore, it has been suggested that the harsh evaluation of COVID-19 patients in Japan might be due to the influence of the BJW among the population (e.g., Miura et al., 2020; Murayama, 2020). Based on these findings, this study hypothesized that the BJW would lead to norm-compliant behaviors (such as wearing masks and getting vaccinated) during the COVID-19 pandemic. However, the results of the correlation analyses did not support this hypothesis. Furthermore, an unexpected significant negative correlation was found between the BJW and vaccination intention, indicating that the stronger the BJW, the lower individuals' intention to get vaccinated. A subsequent analysis showed that the negative correlation between the BJW and vaccination intention was not found among female participants.

Since the results of this study were somewhat unexpected, the findings were interpreted post hoc. The BJW refers to the belief that the world is a fair and stable place where sudden misfortunes do not occur, and that people get what they deserve (Lerner, 1980; Murayama & Miura, 2015). Thus, prior studies have pointed out that the BJW serves as the basis for psychological stability and subjective well-being (Hafer & Bègue, 2005). Further, the BJW has been reported to increase optimism about the future. For example, Sutton, Stoeber, and Kamble (2017) showed that people who hold a strong BJW tend to think that there will be more positive than negative events in the future. In addition, Lucas, Alexander, Firestone, and Lebreton (2009) demonstrated that, when assessing health risks that were difficult to prevent with the message that indicates prevention is difficult, participants with strong BJW were more optimistic about being able to prevent these health risks. Moreover, a meta-analysis found that the BJW was significantly positively correlated with extraversion (Nudelman, 2013), a Big Five personality trait associated with optimism (Sharpe, Martin, & Roth, 2011). Studies conducted during the COVID-19 pandemic indicated that extraversion is associated with decreased social distancing (Carvalho, Pianowski, & Gonçalves, 2020) and more optimistic predictions about the end of the epidemic (Aschwanden et al., 2021). Given these findings, the BJW could have led to more optimistic assessments of the risks posed by COVID-19 (vis-à-vis being infected or becoming severely ill), which in turn led to lower scores in vaccination intention.

The effect of gender differences in risk perception may be one possible explanation for the male-specific negative correlation between the BJW and vaccination intention. Previous studies on risk perception have shown that men tend to underestimate the risk of various hazards,

compared with women (e.g., Nakayachi, Nagaya, & Yokoyama, 2018).<sup>3</sup> This suggests that the interaction between male participants' lower level of risk-perception and the optimistic outlook of the future brought about by BJW may have resulted in the negative correlation between BJW and vaccination intention among male participants.

The arguments stated above are a post-hoc interpretation of the results; therefore, further studies are needed to confirm these findings. Future studies should explore not only the BJW and the intention to get vaccinated, but also risk-perception vis-à-vis COVID-19. In this way, it would not only be possible to examine the hypothesis which posits that COVID-19 risk perception has an interaction effect with BJW on vaccination intention, but also to examine the mediating process through which the BJW influences subjective assessments of the likelihood of infection and the possibility of becoming seriously ill (i.e., COVID-19-related risk perception), subsequently reducing individuals' vaccination intention.

In addition, it should be noted that the absence of a significant correlation between the BJW and vaccination intention among female participants does not mean that there is no correlation in the population. In other words, it is possible that the findings in this paper were the result of an unexpected sampling bias, and that there were no gender-specific differences in the relationship between BJW and vaccination intention. Therefore, it is necessary to examine whether these findings can be confirmed by analyzing a larger sample of each gender.

## 5. Limitations and Conclusion

The study had the following limitations. First, this study did not examine a representative sample of the Japanese population, but rather university students in an area affected by the resurgence of COVID-19; thus, the data analyzed may differ from those of the general population in Japan. Therefore, conducting a nationwide study is necessary, considering region-specific factors, such as infection status and the capabilities of the regional medical system. Second, the COVID-19 countermeasures examined in this study were not exhaustive. Several countermeasures, such as hand washing, hand disinfection with alcohol, and room ventilation were not included. In the future, it would be desirable to analyze countermeasure behaviors comprehensively.

Despite these limitations, this study demonstrated

3 The influence of gender in risk perception has been highlighted as possibly being driven by socio-economic factors, rather than innate differences (Flynn, Slovic, & Mertz 1994).

that conformity was associated with certain COVID-19 countermeasures. Additionally, to my knowledge, this is the first study to show that the BJW may have a suppressive effect on vaccination intentions among men. By clarifying the relationship between the individual differences in the variables and COVID-19 countermeasures in more detail, specific suggestions can be developed to create more effective persuasive messages to promote preventive behaviors.

## 6. References

- Aschwanden, D., Strickhouser, J. E., Sesker, A. A., Lee, J. H., Luchetti, M., Stephan, Y., ... & Back, M. (2021). Psychological and behavioural responses to coronavirus disease 2019: The role of personality. *European Journal of Personality, 35*, 51–66.
- BBC (2020). *Coronavirus: WHO advises to wear masks in public area*. Available at: <https://www.bbc.com/news/health-52945210> (Accessed May 11, 2021).
- Bartholomaeus, J., & Strelan, P. (2019). The adaptive, approach-oriented correlates of belief in a just world for the self: A review of the research. *Personality and Individual Differences, 151*, 109485.
- Carvalho, L. D. F., Pianowski, G., & Gonçalves, A. P. (2020). Personality differences and COVID-19: Are extroversion and conscientiousness personality traits associated with engagement with containment measures? *Trends in Psychiatry and Psychotherapy, 42*, 179–184.
- Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58*, 1015–1026.
- Denke, C., Rotte, M., Heinze, H. J., & Schaefer, M. (2014). Belief in a just world is associated with activity in insula and somatosensory cortices as a response to the perception of norm violations. *Social Neuroscience, 9*, 514–521.
- Flynn, J., Slovic, P., & Mertz, C. K. (1994). Gender, race, and perception of environmental health risks. *Risk Analysis, 14*, 1101–1108.
- Hafer, C. L., & Bègue, L. (2005). Experimental research on Just-World Theory: Problems, developments, and future challenges. *Psychological Bulletin, 131*, 128–167.
- Japan Times (2021). *Stricter virus measures to be rolled out for Osaka, Hyogo and Miyagi*. Available at: <https://www.japantimes.co.jp/news/2021/04/01/national/pre-emergency-measures/> (Accessed May 11, 2021).
- Japanese Ministry of Health, Labor and Welfare (2021). *Expert committee on countermeasures against novel coronavirus infections*. Available at: [https://www.mhlw.go.jp/stf/seisakunitsuite/newpage\\_00011.html](https://www.mhlw.go.jp/stf/seisakunitsuite/newpage_00011.html) (Accessed September 5, 2021). (In Japanese.)
- Lerner, M. J. (1980). *The belief in a just world: A fundamental delusion*. New York: Plenum Press.
- Lucas, T., Alexander, S., Firestone, I., & Lebreton, J. M. (2009). Belief in a just world, social influence and illness attributions: Evidence of a just world boomerang effect. *Journal of Health Psychology, 14*, 258–266.
- Maes, J., & Schmitt, M. (1999). More on ultimate and immanent justice: Results from the research project “Justice as a problem within reunified Germany”. *Social Justice Research, 12*, 65–78.
- Mehrabian, A., & Stefl, C. A. (1995). Basic temperament components of loneliness, shyness, and conformity. *Social Behavior and Personality: An International Journal, 23*, 253–263.
- Miura, A., Hiraishi, K., Nakanishi, D., & Ortolani, A. (2020). International comparison of attitudes toward the outbreak of new coronavirus: Are “self-inflicted” and “self-restraint police” unique to Japan? Poster presented at 61th Conference of Japanese Society of Social Psychology (Webcasting), 2102. Available at: [http://iap-jp.org/jssp/conf\\_archive/paper\\_download.php?s=2020-A-0108](http://iap-jp.org/jssp/conf_archive/paper_download.php?s=2020-A-0108). (In Japanese.)
- Murayama, A. (2020). Discrimination and intolerance in the COVID-19 pandemic: A social psychological perspective, *Toshi Mondai (Municipal Problems), 111*, 48–52. (In Japanese.)
- Murayama, A., Miura, A. (2015). Derogating victims and dehumanizing perpetrators: Functions of two types of beliefs in a just world. *Japanese Journal of Psychology, 86*, 1–9. (In Japanese with English abstract.)
- Nakayachi, K., Nagaya, K., & Yokoyama, H. (2018). Relationship between basic scientific knowledge and anxiety about hazards. *Japanese Journal of Psychology, 89*, 171–178. (In Japanese with English abstract.)
- Nakayachi, K., Ozaki, T., Shibata, Y., & Yokoi, R. (2020). Why do Japanese people use masks against COVID-19, even though masks are unlikely to offer protection from infection? *Frontiers in Psychology, 11*, 1918.
- Nakayachi, K., Ozaki, T., Shibata, Y., & Yokoi, R. (in press). Determinants of hand-washing behavior during the infectious phase of COVID-19. *Japanese Journal of Psychology, Advance online publication*. (In Japanese with English abstract.)
- Nesbit, S. M., Blankenship, K. L., & Murray, R. A. (2012).

- The influence of just - world beliefs on driving anger and aggressive driving intentions. *Aggressive behavior*, 38, 389–402.
- Nudelman, G. (2013). The belief in a just world and personality: A meta-analysis. *Social Justice Research*, 26, 105–119.
- Ohtomo, S., & Hirose, Y. (2007a). The dual-process of reactive and intentional decision-making involved in eco-friendly behavior. *Journal of Environmental Psychology*, 27, 117–125.
- Ohtomo, S., & Hirose, Y. (2007b). The influences of situation-oriented and goal-oriented decision-making on risk-related behavior in a natural disaster. *Japanese Journal of Social Psychology*, 23, 140–151. (In Japanese with English abstract.)
- Ozaki, T., & Nakayachi, K., (2015). Effects of descriptive norms and mutual relationships on precautionary behavior toward earthquakes. *Japanese Journal of Social Psychology*, 30, 175–182. (In Japanese with English abstract.)
- R Core Team. (2019). R: A language and environment for statistical computing. <https://www.r-project.org/>.
- Sakakibara, R., & Ozono, H. (in press). Why do people wear a mask? A replication of previous studies and examination of two research questions in a Japanese sample. *The Japanese Journal of Psychology, Advance online publication*. (In Japanese with English abstract.)
- Sharpe, J. P., Martin, N. R., & Roth, K. A. (2011). Optimism and the Big Five factors of personality: Beyond neuroticism and extraversion. *Personality and Individual Differences*, 51, 946–951.
- Sutton, R. M., Stoeber, J., & Kamble, S. V. (2017). Belief in a just world for oneself versus others, social goals, and subjective well-being. *Personality and Individual Differences*, 113, 115–119.
- Sutton, R. M., & Winnard, E. J. (2007). Looking ahead through lenses of justice: The relevance of just - world beliefs to intentions and confidence in the future. *British Journal of Social Psychology*, 46, 649–666.
- Wolfradt, U., & Dalbert, C. (2003). Personality, values and belief in a just world. *Personality and Individual Differences*, 35, 1911–1918.
- Yokota, K., & Nakanishi, D. (2011). Development of the conformity orientation scale: Informative influence and normative influence. *Studies in the Humanities and Sciences*, 51, 23–36. (In Japanese with English abstract.)

## 7. Funding

This research was supported by JPSP KAKENHI (Grant Number 21K13681).

## 8. Conflict of Interest

The author declared that there were no potential conflicts of interest with respect to the authorship or the publication of this article.

—2021.9.7 受稿 2021.11.2 受理—