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Social punishment for breaching restrictions during the COVID-19 pandemic

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Abstract

In response to the novel coronavirus outbreak, the Japanese government requested the temporary closure of businesses. Consequently, complying with restrictions came to be recognized as the social norm, and stores that continued with business as usual were seen as norm-breakers. This study empirically investigates costly punishment behavior for stores' violation of restrictions and how this behavior changes when a decision-maker receives information pertaining to contrasting norms, implicitly requiring the opposite response. By implementing joy-of-destruction minigames, we found that costly punishment behavior for norm-breakers was significantly stimulated (by approximately 11%) but not increased when additional information was provided.

KEYWORDS
COVID-19, Japan, online randomized experiment, social norms

JEL CLASSIFICATION
C91, D91, C99

1 | INTRODUCTION

Social norms, a set of prescriptive and proscriptive rules, affect behavior through social sanctions or rewards (Bénabou & Tirole, 2011; Buckholtz, 2015). The power of social norms is generated from people's willingness to punish (or reward) others who deviate from (or adhere to) existing norms (Adriani & Sonderegger, 2018; Elster, 1989; Fehr & Gächter, 2000; Krupka & Weber, 2013). In fact, individuals often increase punishment behavior for others who violate norms (hereafter, "norm-breakers"; Fehr & Fischbacher, 2004; Gürerk et al., 2006; Herrmann et al., 2008; Winter & Zhang, 2018). Consequently, social norms support prosocial behaviors (DellaVigna et al., 2012; Gächter et al., 2017; Goldstein et al., 2008) and alleviate antisocial actions (Bicchieri et al., 2020; Dulleck et al., 2016; Fisman & Miguel, 2007; Hallsworth et al., 2017).

Existing social norms can be shifted by manipulating social expectations, which, in turn, changes behavior (Bicchieri & Dimant, 2019; Bursztyn, González, & Yanagizawa-Drott, 2020). For example, Dimant and Gesche (2020) investigated how norm-nudges, attempting to change behavior by altering existing norms, affect punishment behavior

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Abbreviation: JoD, joy-of-destruction.

in the context of lying. They found that information provision on what others do or approve of significantly increased the punishment for norm violations.

One shortcoming of the existing literature is that it is unclear whether people change punishment behavior for norm-breakers when they receive information pertaining to a different type of norm, motivating the opposite response. Two types of norm-related rewarding motivations are relevant here: providing rewards for norm-breakers and receiving rewards by not punishing norm-breakers. For example, in the former case, it is possible that an individual deviates from one norm (X) while complying with a different norm (Y). In this situation, decision-makers would have both motivations: to sanction the violation of *norm X* and reward adherence to *norm Y*. In the latter case, if another norm (Z) guides decision-makers not to punish norm-breakers, it may be because of the expectation of receiving rewards by adhering to *norm Z*. In either case, if the motivation of providing rewards for (or receiving rewards by) adhering to different norms neutralizes the sanctioning motivation of decision-makers, the punishment level is expected to be reduced compared with pure norm-breakers. However, little is known about how individuals behave when complying with two social norms requiring opposite responses.

We empirically investigate the costly punishment behavior for those breaching social norms and examine how the implicit provision of information suggesting contrasting norms affects the level of punishment. For this purpose, we utilize the situation of the novel coronavirus disease (COVID-19) outbreak in Japan.

COVID-19 has spread rapidly worldwide, with over 21.3 million reported cases as of August 16, 2020 (World Health Organization, 2020). To prevent the crisis from escalating further, most countries have implemented stringent policies, such as shutting national borders, limiting recreational and cultural activities, and temporarily closing businesses and schools (Chinazzi et al., 2020; Deb et al., 2020; Kraemer et al., 2020; Tian et al., 2020). However, unlike those countries that enforced restrictions (e.g., Australia, China, India, Italy, New Zealand, and the United States), Japan adopted a voluntary policy because the domestic emergency law does not allow the government to enforce pandemic-related restrictions (Tashiro & Shaw, 2020).

The voluntary requests encouraged many to adhere to the restrictions. One potential reason for this success is that adhering to the stay-at-home policy and temporary business closure was nationally recognized as the social norm during the pandemic (hereafter, "restriction norms"). For example, in a public opinion survey in July, 67% of the respondents agreed to adhere to voluntary restrictions rather than pursue economic activities, while only 25% supported the pursuit of economic activities (Japan Broadcasting Corporation, 2020). In another survey in May, a larger proportion of people (49%) reported that going outside for private purposes was unacceptable (Committee of Infrastructure Planning and Management, 2020). Consequently, stores and firms that did not comply were viewed as implicit social norm-breakers, even though they were not violating any legal rights. In fact, there have been reports of the harassment of store or firm owners who continued operations (Japan Times, 2020). A primary reason for breaching restrictions is the tradeoff between public health and direct economic benefits. Kawaguchi et al. (2020) found that small-scale enterprises following the temporary business closure request witnessed decreased sales of 10 percentage points. In addition, some firms may have had to continue operations owing to limited governmental financial support.[1]

Using this situation as a natural experimental setting, this study empirically investigates the costly punishment behavior for norm-breakers and examines the effects of providing decision-makers with information on the level of punishment meted out by them.[2] To measure the level of punishment, we conducted a joy-of-destruction (JoD) experiment on 1600 individuals in Japan. Participants decided whether to reduce donations to specific industries affected by the pandemic at a personal cost. Randomly selected participants were asked whether they used their endowment to reduce the donation given to an anonymous store not complying with the temporary business closure request (i.e., the norm-breakers), while others played the JoD against the store following the restriction policy. Since there is no monetary benefit to reducing the donation, the dominant strategy of the JoD experiment for self-concerned participants is "not reducing." Following previous studies (Abbink & Herrmann, 2011; Prediger et al., 2014), if the donation amount for the norm-breaker is smaller than that for the store complying with the government's restriction request, the reduction in the donation is referred to as costly punishment for norm-breakers.

2 | COVID-19 OUTBREAK AND RESTRICTION POLICIES IN JAPAN

Between March and June 2020, COVID-19 cases per one million population increased from two to 147 in Japan (Idogawa et al., 2020).[3] To prevent the spread of COVID-19, the Japanese government declared a state of emergency from April 4 to May 25, 2020 (Figure 1). However, stringent restrictions such as a city-wide lockdown could not be
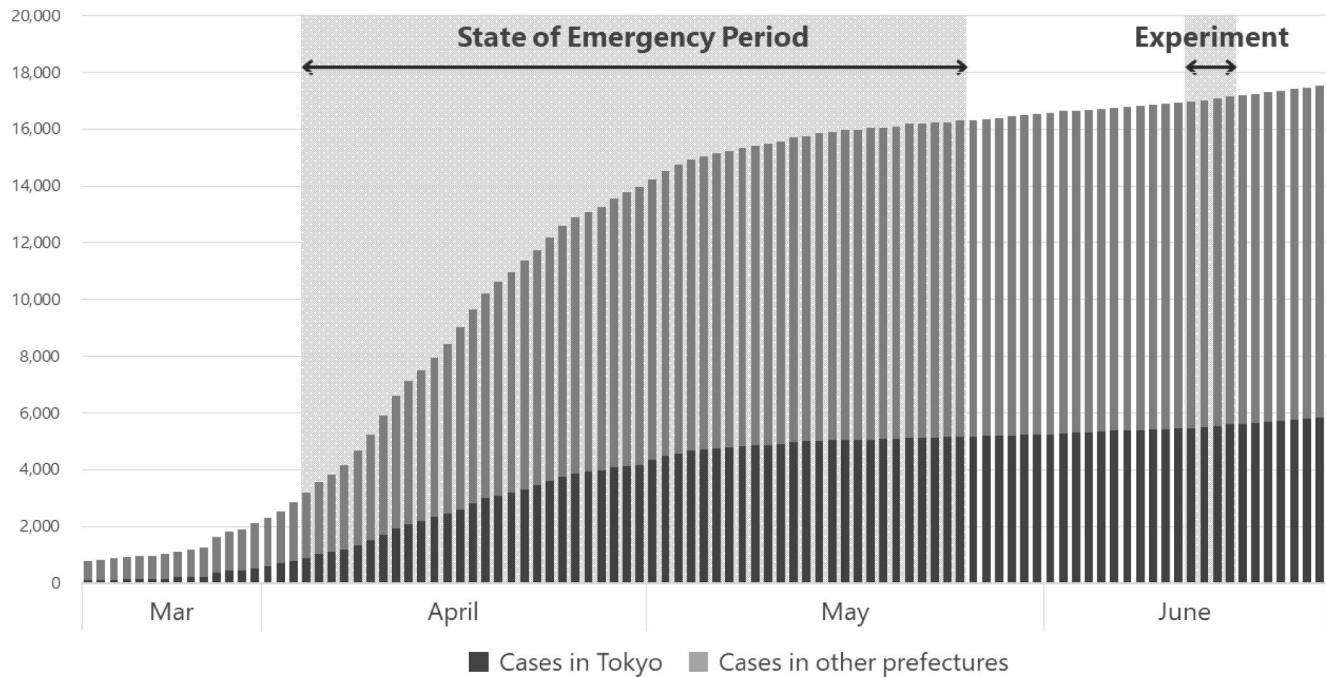
FIGURE 1 Cumulative COVID-19 cases in Japan and the timing of the state of emergency declaration and data collection. *Data source*: Ministry of Health, Labor, and Welfare of Japan

legally enforced under Japanese emergency law even during a pandemic. Thus, the national and local governments made requests to voluntarily stay at home and temporarily close businesses.[4] These actions are purely voluntary and depend on personal decisions. However, the requests successfully encouraged many people and firms to adhere to the restrictions; social mobility in Tokyo declined by approximately 60% on weekdays and 80% on weekends (Canon Institute for Global Studies, 2020).

One potential reason for the success of these voluntary restrictions is that adhering to the stay-at-home policy and temporary closure came to be recognized as the social norm during the pandemic.[5] However, adherence norms triggered vigilante behavior throughout Japan. Particularly, harassment by "coronavirus vigilantes" (they are termed the "self-restraint police") against people, stores, and firms breaching the restrictions became socially recognized. Denyer and Kashiwagi (2020) reported that threatening notes were pinned to the doors of bars and restaurants that stayed open during the state of emergency. Legally, it is clear that these stores were victims because there is no law forcing them to close. However, except in the case of excessive violent behavior, to the best of our knowledge, none of the cases were criminally prosecuted.[6] In addition, the Japanese government did not officially make a statement regarding the self-restraint police.[7]

Subsequently, many industry associations established COVID-19 prevention guidelines to continue operations. Typically, these include washing hands with soap, performing disinfection, wearing masks, and social distancing. However, there is no legal obligation to adhere to safety guidelines, which is also recognized as a different social norm in Japan (hereafter, "guideline norms"). For example, a firm-level survey conducted in July revealed that 81% of the respondents adopted the safety guidelines (Ministry of Agriculture, Forestry and Fisheries, 2020).

3 | EXPERIMENTAL DESIGN AND DATA COLLECTION

3.1 | JoD experiment

The online randomized experiment was conducted between June 12 and 15 (17 days after the end of the emergency), targeting 1600 individuals through the online survey platform "iResearch."[8] The participants took an average of 9 min to complete the two tasks: (a) an individual questionnaire survey and (b) a JoD minigame.

The JoD minigame analytically measures antisocial or conflict behavior by estimating the willingness to harm others at a personal cost (Abbink & Herrmann, 2011; Abbink & Sadrieh, 2009; Prediger et al., 2014). Participants were initially

endowed with 100 Japanese yen (approximately US$1), besides the participation allowance of 35 yen. The participation allowance of 35 yen was the standard used by the survey company. Since we provided an additional 100 yen as the endowment, the participants had an opportunity to receive the hourly wage of approximately 900 yen as the maximum (135 yen × 6.667), which is higher than the minimum hourly wage in Japan (i.e., 844 yen). Thus, we believed that a monetary incentive for participation was large enough. Prior to the JoD experiment, the participants were informed that the research team would donate 500 yen per participant (approximately US$5) to an anonymous store negatively affected by the COVID-19 pandemic.[9] The participants had to decide whether to reduce the donation amount by 100 yen at a personal cost of 20 yen. Thus, participants could spend their entire endowment amount, reducing it to zero. They could also keep 100 yen by choosing not to reduce the donation. The study only considers money-reducing expenses from 20 to 100 yen in intervals of 20 yen (i.e., the donation choices are 500, 400, 300, 200, 100, and 0 yen).[10]

Although the store that received the donations was not disclosed to the participants, we indicated that the recipient would be randomly selected from five industries: (a) pinball gambling, (b) food service with alcohol delivery, (c) food service without alcohol delivery, (d) live music, and (e) retail grocery.[11] Participants played the JoD minigames five times and made donation decisions for each industry, given that they had 100 yen for destroying the donation for each industry each time they played.[12] After the experiment, one donation decision from the five minigames was randomly selected. Moreover, based on the selected decision, the endowment amount was given to each participant after the experiment.[13]

3.2 | Random interventions

This study employs a between-subject experimental design to evaluate the effects of treated interventions on the donation amount. We randomly allocated participants to one of four treatments and provided different scenarios during the JoD experiment (Table 1). A detailed description of participants' demographic characteristics is presented in Appendix A. We compared the average of each indicator by using Scheffe's multiple comparison test and found no statistical differences between the four treatment groups.

In the complier treatment, participants decided the donation amount for the store that complied with the government's business closure request. They were told the following two things during the JoD minigame against a *j industry* store[14]:

> A 500 yen donation will be made to a *j industry* store that complied with the temporary business closure request during the state of emergency.
> Do you wish to reduce this donation amount for a *j industry* store that complied with the request by spending points you own?

In contrast, participants in the norm-breaker treatment played the JoD minigame against a store that continued to operate during the state of emergency, also considered a norm-breaker. To change the donation destination from compliant store to norm-breaking store, we modified the above instruction:

TABLE 1 Description of random interventions

Treatment groups	Donation is given to the store	Additional information provision	Definition
Complier	Compliant	None	The JoD against the store complying the restriction policy
Norm-breaker	In violation	None	The JoD against the store breaking the restriction policy
Guideline norms	In violation	Guideline adherence	The JoD against the store breaking the restriction policy but complying prevention guidelines
Moral norms	In violation	Bankruptcy risk	The JoD against the store breaking the restriction policy but facing bankruptcy risk

Note: The number of participants for each group is 400. The participants in the guideline norms treatment did not receive the information on bankruptcy risk, while those in the moral norms treatment did not receive safety guideline information.

Abbreviation: JoD, joy-of-destruction.

> A 500 yen donation will be made to a *j industry* store that did not comply with the temporary business closure request during the state of emergency.
> Do you wish to reduce this donation amount for a *j industry* store that continued business operations by spending points you own?

To identify how the provision of information implying contrasting norms affects costly punishment behavior, we provided additional information. In the guideline norms treatment, participants were informed that a norm-breaking store was in fact adhering to COVID-19 safety guidelines to continue business operations. Thus, the instructions for the guideline norms treatment were as follows:

> A 500 yen donation will be made to a *j industry* store that did not comply with the temporary business closure request during the state of emergency.
> However, the store strictly adhered to the guidelines pertaining to infection prevention for customers and employees.
> Do you wish to reduce this donation amount for a *j industry* store that continued business operations by spending points you own?

Finally, participants in the moral norms treatment were only told that a norm-breaking store faced the risk of bankruptcy, as follows:

> A 500 yen donation will be made to a *j industry* store that did not comply with the temporary business closure request during the state of emergency.
> The store faced bankruptcy risk if they had followed the request.
> Do you wish to reduce this donation amount for a *j industry* store that continued business operations by spending points you own?

Previous studies suggest that people often perceive supporting economically vulnerable people and not hurting them as a social norm (hereafter, "moral norms"; Andreoni et al., 2017; DellaVigna et al., 2012). The main aim of providing the bankruptcy risk information was to imply that the norm-breaking store was in an economically vulnerable situation.

3.3 | Hypotheses

In the JoD experiment, the participants did not receive any monetary benefits for reducing the donation. Thus, the dominant strategy for self-concerned participants was "not reducing" for all treatments. If participants decided to reduce their donation at a personal cost, we defined the reduction amount as a proxy of the punishment level. Studies indicate that strategic motives, such as inequity aversion or envy, can be removed as potential motivations for reduction if the experimental setting is one-shot and decisions are anonymous (Cubitt et al., 2011; Prediger et al., 2014). However, the context of our field experiment may have evoked some inequality-related emotional effects in participants. The economic losses resulting from the COVID-19 pandemic have wide individual variations; this must be factored into the analysis of the results of the experiment. As explained under Section 4, we also conducted robustness checks for the other possibility of donation reduction, namely, inequity aversion.

We will test two hypotheses by examining how different treatments affect participants' costly punishment behavior. First, people are likely to sanction norm violators (Dimant & Gesche, 2020; Fehr & Fischbacher, 2004; Herrmann et al., 2008; Winter & Zhang, 2018). Therefore, we hypothesize that breaching restrictions during the COVID-19 pandemic stimulates costly punishment behavior (Hypothesis 1). This hypothesis can be tested by comparing the donation amount between the norm-breaker and complier treatments. If people engage in costly punishment behavior against norm-breakers, the donation amount should be smaller in the norm-breaker treatment than the complier treatment.

Second, we hypothesize that the costly punishment level for norm-breakers is reduced when people receive information on contrasting norms (Hypothesis 2). Since social norms include various types of prescriptive and

proscriptive rules, it is possible that complying with multiple norms requires opposite responses from decision-makers. As mentioned, we consider two types of rewarding motivations potentially affecting costly punishment behavior: the motivation to provide rewards for norm-breakers and the motivation to receive rewards by not punishing norm-breakers.

In this experiment, information provision complicates the situation in the guideline norms and moral norms treatments, because it may increase participants' rewarding motivation for the norm-breaking store. In the guideline norms treatment, the donation is given to a store that breaks restriction norms but complies with guideline norms. If participants in the guideline norms treatment are aware of the conflict, the costly punishment behavior, such as donation reduction, might be reduced through the motivation to reward the norm-breaking store for adhering to guideline norms.

Moreover, the additional instructions in the moral norms treatment, such as the risk of bankruptcy, imply that the norm-breaking store is in an economically vulnerable situation. Thus, if participants are motivated to receive rewards by adhering to moral norms, they are likely not to reduce the donation even for a norm-breaking store.[15] Therefore, moral norm information may reduce costly punishment behavior for norm-breaking stores by increasing participants' willingness to comply with moral norms.

Our experiment can directly estimate to what extent participants reduce costly punishment behavior in each treatment. However, we cannot investigate the mechanism of this reduction because it is unclear how participants perceive the information and internalize observed social norms. To reveal the detailed mechanism, we can indirectly test Hypothesis 2 by estimating whether the donation amounts in the guideline or moral norms treatments are different from those in the norm-breaker treatment. If participants' motivation for punishing norm-breakers is eroded through their rewarding motivation, the donation amounts in the guideline and moral norms treatments should be larger than in the norm-breaker treatment.

4 | METHODOLOGY

4.1 | Benchmark estimation

To identify costly punishment behavior for the breach of restrictions and the effect of interventions, we started with a prefecture-level fixed effects regression model, as follows:

$$Donation_{ij} = \alpha + \beta_1 Breaker_i + \beta_2 Guideline_i + \beta_3 Moral_i + \gamma Indust_j + \delta X_i + \rho_i + \varepsilon_{ij}, \quad (1)$$

where $Donation_{ij}$ is the donation amount to a store for industry j for individual i. $Breaker_i$, $Guideline_i$, and $Moral_i$ are the dummy variables representing to which treatment individual i has been assigned (treatment dummies). More precisely, $Breaker_i$ takes a value of 1 if individual i plays the JoD minigame against the store that breaches restrictions, while $Guideline_i$ and $Moral_i$ take 1 if individual i receives the guideline norms treatment and moral norms treatment, respectively, or 0 otherwise. $Indust_j$ denotes a set of dummy variables for each industry. X_i is a set of observable demographic characteristics of individual i (Table A1) and ρ_i represents the prefecture-specific fixed effects for individual i, which reduces the unobserved time-invariant differences between prefectures. Standard errors are clustered at the treatment and industry level to account for autocorrelations in the error term ε_{ij}.

In Equation (1), we excluded the dummy variable for the complier treatment, where participants were more likely not to reduce the donation than the other three treatments. Therefore, the βs in Equation (1) are expected to be negative values. More precisely, β_1 in Equation (1) indicates the general costly punishment behavior for the breach of restrictions, while β_2 and β_3 measure the average punishment level with each treatment of information provision. As indicated by Hypothesis 2, we expect that β_2 and β_3 will be larger than β_1 ($\beta_2 > \beta_1$ and $\beta_3 > \beta_1$).

In addition, we employed a multinomial logistic model to estimate the nonlinear effects of the treatments:

$$Prob(Donation_{ij} = k) = \frac{\exp\left(\theta'_k Z_i + \gamma'_k Industry_j\right)}{1 + \sum_{k=0}^{5} \exp\left(\theta'_k Z_i + \gamma'_k Industry_j\right)}, \quad (2)$$

where $Donation_{ij}$ represents the donation amount for industry j for individual i: 500 yen ($k = 0$), 400 yen ($k = 1$), 300 yen ($k = 2$), 200 yen ($k = 3$), 100 yen ($k = 4$), or 0 yen ($k = 5$). We assume θ'_0 and γ'_0 for normalization. Z_{ij} is a set of variables, including the treatment dummies, observable characteristics (X), and prefecture-specific fixed effects. Marginal effects are used to estimate the probability of donation decisions.

4.2 | Robustness checks

To further investigate the mechanisms of donation decision-making behavior, we created regression models with interaction terms:

$$Donation_{ij} = \alpha + \beta_1 Breaker_i + \beta_2 Guideline_i + \beta_3 Moral_i + \varphi Interaction_i + \gamma Indust_j + \delta X_i + \rho_i + \varepsilon_{ij}, \qquad (3)$$

where $Interaction_{ij}$ is a set of interaction terms between a demographic variable and each treatment dummy.

If social punishment is the dominant motivation for reducing the donation for norm-breakers, participants who highly respect social norms could make a greater reduction in donation for a norm-breaking store. However, COVID-19 is a unique social problem. Construction of social norms for disease-related problems is subject to change as the situation develops. Therefore, the effect of general social norms and COVID-19-related norms may have a different impact on costly punishment behavior. To empirically test this assumption, we utilized two demographic variables included in X in Equation (3) that are relevant to social norms: the stay-at-home dummy and the initial level of social norms.

The stay-at-home dummy takes a value of 1 if the participant strictly complies with the stay-at-home request. Since following the stay-at-home order was viewed as the social norm, we assumed that strict compliers were more sensitive to COVID-19 norm adherence. In addition, an indicator of the initial level of social norms before the experiment was assessed by a principal component analysis (Table A2). This indicator was expected to capture the participants' attitudes toward social norms: a higher value indicated higher adherence to social norms in general. Hence, participants who complied with the stay-at-home request or had a higher initial level of social norms were likely to respect social norms.

As robustness checks, we first analyzed the interaction of the stay-at-home dummy with each treatment dummy. Furthermore, we created a regression model with the interaction terms between the initial level of social norms and each treatment dummy. If social punishment for norm-breakers is the dominant motivation, the coefficient of the interaction term with the norm-breaker treatment dummy would be significantly negative. In other words, a negative sign would imply that the participants with respect for norms were likely to reduce the donation for a norm-breaking store even after controlling for the general effects of our treatments.

In contrast, the donation amount could differ between the treatments owing to motivations other than costly punishment, such as inequity aversion. Studies indicate that people's behavior is influenced by their equity concerns (Bolton & Ockenfels, 2000; Fehr & Schmidt, 1999). For example, according to Dimant and Gesche (2020), people severely punish norm-violating behavior (i.e., lying), when norm violation leads to more inequity. In this study, we are concerned with the motivation for inequity aversion, which may affect the donation decision in two ways. First, distributional motivation, such as a preference for redistribution or consideration of social losses, may affect the donation decision. To transfer more money to a store negatively affected by the pandemic, some participants could have decided not to reduce the donation. However, since the participants had been informed that all the stores in consideration had been negatively affected by the COVID-19 pandemic, the effects of distributional motivation on donation amounts between treatments could be reduced.

Second, participants who experienced a decrease in income during the pandemic could be motivated to reduce the donation, mainly to reduce disadvantageous inequality. To investigate this, we regressed the model with the interaction terms between the monthly income change in April and each treatment dummy. Through the questionnaire survey, we obtained the monthly income change in April to gauge the economic impact of the COVID-19 pandemic. The entire Japanese economy was substantially affected in April (Kawaguchi et al., 2020); the economic performance index published by the Cabinet Office drastically dropped from 14.2 in March to 7.9 in April. Among our participants, the monthly income in April declined by approximately 10% as compared to the previous year.

The secondary motivation of inequity aversion could be controlled by the variable of monthly income change in April, already included in X in Equation (1). However, participants who were negatively impacted could have had a

strong incentive to strongly reduce the donation for norm-breakers. We can empirically test this possibility by including the interaction terms between the income change and treatment dummies. If the inequity aversion motivation is the primary driver, the coefficient of each interaction term should be significantly positive, that is, participants who experienced a reduction in monthly income in April would donate lower amounts.

5 | RESULTS

5.1 | Results of the JoD experiment

As per the results of the JoD minigame (Figure 2), the average donation amount was approximately 332.2 yen (US$3.32), indicating that participants decided to reduce the donation amount by an average of 33% at a personal cost.[16] As expected, the donation amount in the norm-breaker treatment (309.6 yen) was significantly smaller than in the complier treatment (343.3 yen). Similarly, participants receiving the norm-breaker treatment transferred approximately 8.4% less than the guideline and moral norms treatments ($p < .01$). In contrast, as with the guideline and moral norm treatments, there was no statistical difference in donation amount between the complier and information provision treatments. The summary statistics of the JoD experiment imply that participants tended to reduce the donation amount for norm-breakers, whereas the donation for norm-breakers became similar to that for compliers when additional information was provided.

Figure 3 displays the distribution of donation decision by treatments. The horizontal axis represents the donation amount; 500 corresponds to participants' decision not to reduce the donation (i.e., the no-reduction action), while 0 indicates that participants used the entire endowment for reduction (i.e., the full-reduction action).

The figure shows that the distribution of the donation decision was similar between treatments: the proportion of the no-reduction action was greater than other donation decisions, followed by the full-reduction action. However, on comparing the norm-breaker and complier treatments, the proportion shifted slightly from no punishment to full punishment.[17]

5.2 | Main results

The first column of Table 2 shows the estimation results of Equation (1), while column 2 presents the results without participant demographics. First, the norm-breaker treatment negatively affected donation amount, which indicates the general punishment behavior for breaching restrictions. The coefficient indicates that people decreased the donation amount for norm-breakers by 35 yen.

Next, in comparison with the norm-breaker treatment, we expected the additional information on guideline and moral norms to alleviate donation reducing behavior via a change in social norm perception. The results show that the coefficients of both information provision treatments were negative but insignificant. Thus, the donation amount for norm-breakers became similar to the amount for compliers when additional information implicitly indicating guideline norms and moral norms was provided. In addition, the estimated coefficients of the guideline and moral norms treatments were significantly different from the norm-breaker treatment, while there was no statistical difference in coefficients between the guideline and moral norms treatment dummies.

Furthermore, we investigated the nonlinear effects of the treatments by using the multinomial logistic model. The vertical axis in Figure 4 shows marginal effects, which indicates the probability of each donation amount compared with the complier treatment. For example, the figure of the norm-breaker treatment suggests that the probability of the participant choosing the full-reduction action was significantly increased by 6.8%. In addition, the norm-breaker treatment significantly reduced the probability of donating 400 and 500 yen by 4.1% and 3.2%, respectively. These results suggest that the significant negative effects of the norm-breaker treatment dummy observed in Table 2 are the result of an increase in the full-reduction action and a decrease in the no-reduction action.

Compared with the norm-breaker treatment, the relation in the guideline and moral norms treatments became flat. Particularly, the insignificant results in the donation amount of 0 yen clearly indicate that the full-reduction action was alleviated through both guideline and moral norms treatments compared with the norm-breaker treatment. Additionally, the marginal effects of donating 500 yen in the guideline norms treatment was insignificant, implying that the probability of the no-reduction action was similar to that of the complier treatment. In
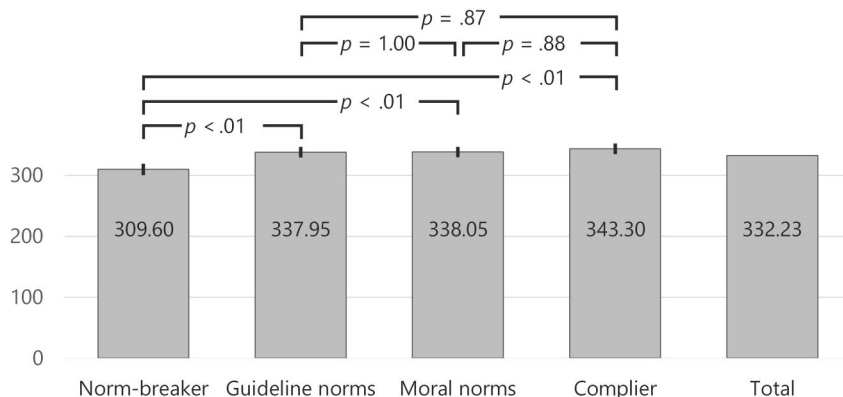
FIGURE 2 Average donation amount by treatments. The vertical axis indicates the donation amount in Japanese yen and the values in the bars are the average donation amount for each treatment group. The maximum donation amount was 500 yen, which participants could reduce to zero by spending all their endowment. Error bars indicate 95% confidence intervals. Top horizontal bars show p-values for Scheffe's multiple comparison test between the two groups
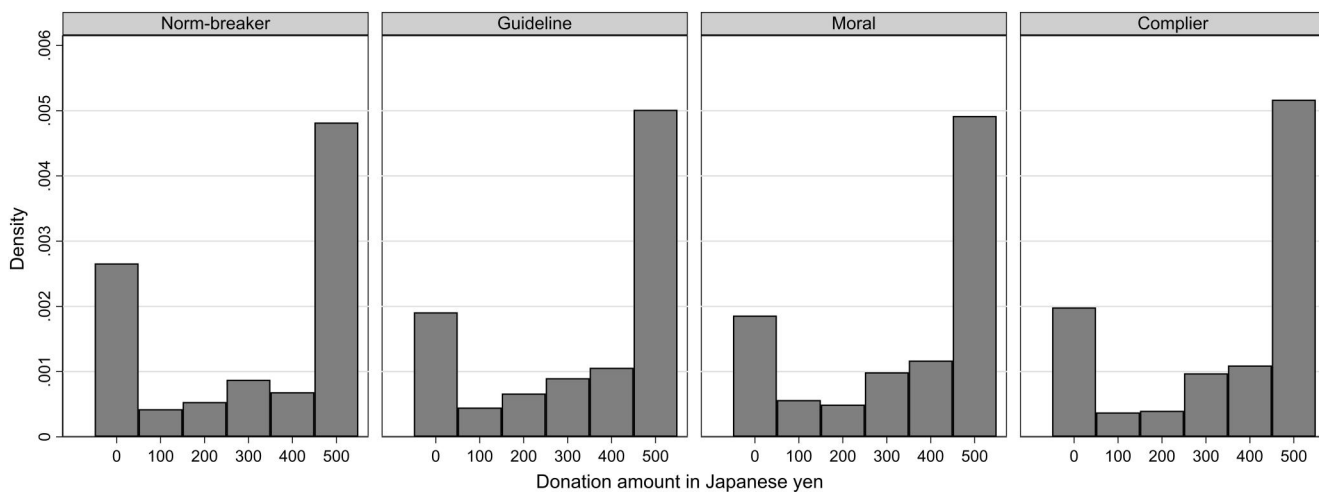

FIGURE 3 Distribution of donation amount by treatments. The values on the horizontal axis are the donation amount in Japanese yen. The maximum donation amount was 500 yen, which participants could reduce to zero by spending all their endowment

contrast, the results of the moral norms treatment show that the marginal effects of the donation of 500 yen were negative and significant. Although the marginal effects for the moral norms treatment (−0.021) were slightly higher than for the norm-breaker treatment (−0.032), there was no statistical difference ($p = .26$). These results suggest that participants in the moral norms treatment are less likely to take the no-reduction action than those in the complier treatment.

5.3 | Robustness checks

Table 3 shows the estimation results with the interaction terms; column 1 presents regression with the interaction terms between the stay-at-home dummy and each treatment, while column 2 shows the results with the interaction terms for the initial level of social norms. Consistent with the benchmark results, the donation amount was significantly reduced in the norm-breaker treatment compared with the complier treatment. Although the guideline and moral norms treatment dummies were significantly negative in column 1, the coefficients of both dummies were statistically different from the coefficient of the norm-breaker treatment dummy.

TABLE 2 Effect of treatments on donation amount

Dependent variable: Donation amount	(1)	(2)
Norm-breaker	−35.253*** (6.456)	−35.926*** (6.445)
Guideline norms	−4.802 (5.265)	−6.011 (5.227)
Moral norms	−7.067 (4.951)	−8.283 (4.922)
Constant	429.822*** (14.013)	358.180*** (7.140)
Industry dummies	Yes	Yes
Demographic characteristics	Yes	-
Prefecture fixed effect	Yes	Yes
Observations	8000	8000
R-squared	.043	.032
Mean of the donation amount (yen)	332.23	

Note: The three treatment variables in the regression represent whether an individual receives the norm-breaker treatment, the guideline norms treatment, or the moral norms treatment. Thus, the baseline category is a subject in the complier treatment. Standard errors are clustered at the treatment and industry level in parentheses; *** indicates statistical significance at the 1% level.
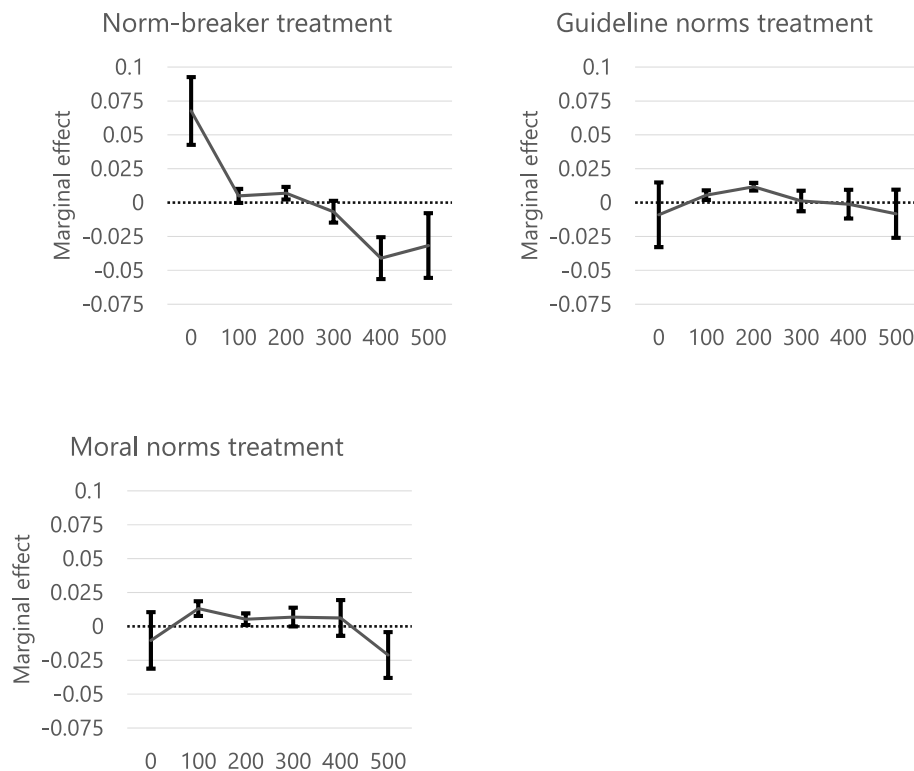

FIGURE 4 Nonlinear effects of treatments. Marginal effects on the probability of donation decisions and 95% confidence intervals of a multinomial logistic model are reported. The values on the horizontal axis are the donation amount in Japanese yen

Even after controlling for general treatment effects, we observed the significantly negative effect of the interaction terms for the norm-breaker treatment in columns 1 and 2. In contrast, the interaction terms for the guideline and moral norms treatments were insignificant. These results suggest that participants who valued social norms reduced the donation when they only received information on violating restriction norms.

Furthermore, to examine the motivation for inequity aversion, we performed the regression with the interaction terms for the monthly income change in April shown in column 3. First, the monthly income change in April was

TABLE 3 Estimation results with interaction terms

Dependent variable: Donation amount	A variable used for the interaction terms:		
	Stay-at-home dummy (1)	Initial level of social norms (2)	Monthly income change in April (3)
Norm-breaker treatment	−23.430*** (3.670)	−35.343*** (6.477)	−36.976*** (7.589)
Guideline norms treatment	−9.111** (4.302)	−5.164 (5.251)	−10.178 (5.879)
Moral norms treatment	−9.452** (4.152)	−6.996 (4.933)	−9.739 (5.895)
Interaction terms:			
Norm-breaker treatment	−19.104** (7.244)	−11.852*** (3.996)	−0.173 (0.170)
Guideline norms treatment	6.342 (6.310)	2.701 (3.133)	−0.512** (0.185)
Moral norms treatment	3.811 (7.503)	3.220 (2.827)	−0.269 (0.210)
Stay-at-home dummy	3.563 (5.535)	0.934 (3.243)	1.023 (3.187)
Initial level of social norms	−3.698** (1.578)	−1.967 (1.625)	−3.741** (1.602)
Monthly income change in April (%)	0.253** (0.093)	0.249** (0.094)	0.496*** (0.123)
Constant	428.069*** (12.377)	429.607*** (14.032)	432.684*** (14.231)
Other independent variables	Yes	Yes	Yes
Prefecture fixed effect	Yes	Yes	Yes
Observations	8000	8000	8000
R-squared	.043	.044	.043

Note: The results of robustness checks indicated in Section 4.2 are reported. Column 1 presents regression with the interaction terms between the stay-at-home dummy and each treatment dummy. The stay-at-home dummy take a value of 1 if an individual followed the stay-at-home request. Column 2 shows the results of the interaction terms for the initial level of social norms obtained from a principal component analysis. Column 3 includes the interaction terms for the monthly income changes in April. Standard errors are clustered at the treatment and industry level in parentheses; ** and *** indicate statistical significance at the 5% and 1% levels, respectively.

positively associated with the donation amount, indicating that a 10% decrease in the monthly income reduced the donation by 4.96 yen. This result suggests that in general, the donation was likely reduced because of participants' motivation toward inequity aversion. In contrast, there was no statistical relationship between the donation amount and the interaction terms in the norm-breaker and moral norms treatments. Although we found a significant effect of the interaction term in the guideline norms treatment, the coefficient was in the direction opposite to expectation, that is, increase in monthly income tended to be associated with a reduction in donation for the store breaking restriction norms but complying with guideline norms.

6 | DISCUSSION

We found that violating restriction norms led to a significant reduction in the donation received by stores, even at a personal cost to the participants. The coefficient of the norm-breaker treatment indicated that the average reduction amount for violation of restriction norms was 35 yen, accounting for approximately 11% of the average donation amount (i.e., 332 yen). Since previous research based on a similar experimental approach is limited, it is difficult to identify whether reduction by 11% is economically important. However, Bursztyn, Egorov, and Fiorin (2020) found that there was an 8%–11% difference in donation amount to a xenophobic organization after interventions aiming to change social norms regarding expressing views on immigrants. Therefore, the 11% reduction in donation amount observed in this study may not be insignificant.

As mentioned, the punishment motivation for violating restriction norms is a potential reason for the smaller donation for the norm-breaker treatment compared with the complier treatment. Robustness checks also suggested that participants with high respect for social norms tended to reduce their donation to a greater extent, even after controlling for general treatment effects. These results are consistent with prior findings. People are often willing to punish norm-

breakers to enforce social norms even if they cannot expect monetary benefits from the punishment (Kamei, 2014; Kosfeld & Rustagi, 2015).

In contrast, the inequity aversion motivation can also be a cause of reduction behavior. In fact, we found that the monthly income change was positively associated with the donation amount. Similar to previous findings (Bolton & Ockenfels, 2000; Dimant & Gesche, 2020; Fehr & Schmidt, 1999), these results imply that participants were generally concerned about disadvantageous inequality. In contrast, the interaction term between the income change and the norm-breaker treatment was insignificant and negative (Table 3). Although the negative signs on the inter-action terms were directionally opposite to our expectation of inequity aversion, we could not fully eliminate the possibility of inequity aversion. However, even if inequity aversion influenced the costly punishment behavior of the participants, it does not overshadow our main treatment effects. Therefore, the results of benchmark estimation and robustness checks suggest that the donation reduction was likely driven by the punishment motivation for violation of restriction norms, rather than the inequity aversion motivation. Based on these results, we conclude that Hypothesis 1 is supported.

Furthermore, providing information regarding guideline compliance and bankruptcy risk did not seem to have any significant effect on the donation amount for the norm-breaking store, while the coefficients of these dummies were significantly higher than that of the norm-breaker treatment. Similar findings were found in the robustness estimations. Moreover, the coefficients of the interaction terms indicated that participants who respected social norms did not change their costly punishment behavior for the norm-breaking store when they received the additional information, although similar participants increased the punishment level without this information.

A major limitation of this study is that we were unable to determine how participants in the guideline and moral norms treatments perceived the information. However, these findings suggest that the punishment motivation for norm-breakers could be eroded when people are aware of contrasting norms requiring the opposite response. More precisely, in the guideline norms treatment, participants may have been more motivated to provide rewards for adhering to guideline norms, resulting in the reduction of punishment behavior for the store breaking restriction norms. In addition, in the moral norms treatment, costly punishment behavior was reduced probably because of the increase in the motivation to receive rewards through adherence to moral norms. Overall, these results are consistent with Hypothesis 2 to the degree that people reduced costly punishment behavior for breaching restriction norms after receiving information implicitly suggesting contrasting norms.

We believe that the present findings contribute to the empirical literature on the effect of social norms on behavior. Existing research mainly focuses on a particular norm, for example, lying (Dimant & Gesche, 2020), expressing xenophobic views (Bursztyn, Egorov, & Fiorin, 2020), and tax evasion (Dulleck et al., 2016; Hallsworth et al., 2017). However, our findings imply that people's behavior, including punishment toward norm-breakers, can be affected by their perception of different types of norms. Additionally, there is a possibility that costly punishment behavior for norm-breakers is eroded when the motivation to receive or provide rewards is high.

7 | CONCLUSION

By conducting the JoD experiment on 1600 individuals in Japan, this study reported empirical evidence on costly punishment behavior for the breach of restrictions, such as not following the temporary business closure request, during the COVID-19 state of emergency. We found that the donation given to norm-breakers was reduced by 35 Japanese yen, which accounts for approximately 11% of the average donation amount, suggesting that participants engaged in costly punishment behavior toward norm-breakers. By contrast, costly punishment behavior toward norm-breakers reduced when participants were provided with information on guideline adherence and bankruptcy risk. These results imply that people change their costly punishment behavior toward norm-breakers when they perceive contrasting norms requiring the opposite response (i.e., not punishing norm-breakers).

This study presents several policy implications. First, by establishing restriction norms in society, we may be able to provide an incentive to restrict business operations for stores and firms. Although we do not make claims about the desirability or effectiveness of restriction policies with regard to the pandemic situation, participants in this study showed a higher willingness to punish those who violated restriction norms. Therefore, instead of implementing strict restrictions (i.e., complete city lockdown and curfew), we may utilize the punishment motivation through social norms to encourage stores and firms to comply with the temporary business closure requests.

Second, it is important to consider how to reduce costly punishment behavior in a pandemic situation. The situation in Japan is unique because the law does not allow the enforcement of pandemic-related restrictions. However, social conflicts and hatred between groups with different social identities have often been reported during a pandemic (Bradbury-Jones & Isham, 2020; DeBruin et al., 2012; Di Salvo & Milan, 2020; Mukherjee, 2007). For example, in the United States, armed vigilante groups are reported to have blocked their neighbors who were suspected of having COVID-19 from leaving home (Srikanth, 2020). Conflicts between pro- and anti-restriction groups have been widely observed in the United States (Dyer, 2020). Moreover, according to Mehrotra (2020), the probability of COVID-19-related conflict has increased in India, while religious conflict and public protests are on the decline. Notably, harassment against stores and firms that breach the restrictions has become socially recognized in Japan. One potential approach to alleviate conflicts during the pandemic is to advertise adherence to different norms, such as compliance with prevention guidelines. In addition, individual enterprises may avoid harassment by the self-restraint police by publicly sending messages related to moral norms.

Although it shows that costly punishment for norm-breakers is alleviated through information provision, this study has several major limitations. The primary limitation is that the mechanisms of donation reduction through information provision were not clearly identified. Particularly, it is not clear how individuals perceived the treatment. Second, although our primary contribution is to provide empirical evidence regarding the relationship between costly punishment behavior and social norms, the explicit link to theory, especially concerning both sanctioning and rewarding motivations for norm-breakers, is lacking. Thus, theoretical study is needed to understand the mechanisms of how people change their costly punishment behavior when they face contrasting social norms. Finally, this study is based on a between-subject design providing an average treatment effect for each intervention. However, a within-subject design, which estimates changes at the subject level, can allow us to analyze heterogeneity in subjects' perception of adherence to social norms (Drouvelis & Marx, 2020). Future research should focus on gathering more empirical evidence to understand how people change their behavior when they face contrasting social norms based on a within-subject analysis.

CONFLICT OF INTEREST
The authors declare that they have no competing financial interests or personal relationships that could have influenced the work reported in this paper.

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ENDNOTES
[1] Approximately 65% of the respondents in the public opinion survey in May reported that COVID-19 related financial support from the government was not sufficient to comply with the temporary business closure request (Committee of Infrastructure Planning and Management, 2020).

[2] Although Bartscher et al. (2020) imply that social norms could reduce the spread of COVID-19, the desirability of such norms is not a focus of this study.

[3] Compared with other countries, the number of cases per one million population in Japan was relatively low. For example, the world average changed from 11 to 1342 during the same period.

[4] Industries considered essential—such as hospitals, transportation services, delivery services, and grocery stores—were exempted from such restrictions.

[5] Like any society, social norms are important in Japan. Several empirical studies indicate that social norms may affect decisions in a variety of settings, including the care of elderly parents (Horioka et al., 2018), saving and bequest behavior (Horioka, 2019), energy-saving behavior (Arimura et al., 2016), voting behavior (Yamamura, 2011), and the governing institution of "Sumo" (West, 1997).

[6] In some cases, the self-restraint police has also been arrested on suspicion of extortion as they threatened to burn down non-compliant stores (FNN Prime, 2020).

[7] There is a possibility that some participants in our experiment considered harassment of stores breaching restrictions a legal violation, which is legally correct. However, the perception of legal norm violation did not bias our results, mainly because our experiment focuses

on donation decisions. Participants' donation decision should be independent from the perception of legal norm violation since donation reduction is itself not violating legal norms.

[8] We recruited individuals who were registered with the online survey platform "iResearch" owned by the survey company "Neo Marketing." The electronic survey was constructed by the survey company after the investigators finalized the instructions for the survey and experiment. The sample images of the survey interface and instructions are presented in Appendix B.

[9] Participants could not increase the donation amount by using their endowment. The total donation amount after the experiment was 535,200 Japanese yen. Based on the results of the JoD experiment, we made a donation through the industry groups.

[10] We used discrete choices for the JoD minigame to avoid confusion. If we directly asked participants to enter the donation amount, there was the possibility of misunderstanding whether they had to enter the donation amount or the reduction amount because the JoD minigame is complicated and not very common. When the participant chose the discrete choice in this experiment, we provided both the donation amount and the reduction amount.

[11] We expected the participants to reduce the donation amount for the pinball gambling and live music industries because these are frequently criticized as high-risk areas for the spread of COVID-19. We included food service industries with and without alcohol delivery since their sales were severely affected by the stay-at-home request. The retail grocery industry, categorized as an essential business, was included for comparison.

[12] The order of industries for the JoD experiment was randomized.

[13] Although the participants could identify the endowment amount after the experiment, the selected industry for the donation was not explicitly disclosed.

[14] In the actual experiment, *j industry* was replaced with the name of one of the five selected industries (see Appendix B for the translated version of the instructions used in this study).

[15] The survey company possesses personally identifiable information, such as participants' names and full addresses. Since participants were instructed that the endowment amount would be determined by the outcome of the JoD minigame, they could have been aware that their donation decisions were being observed at least by the survey company. Hence, we assume that participants receiving the moral norms treatment would be motivated to receive rewards by adhering to moral norms.

[16] Table C1 in Appendix C shows the average donation amount for each industry between treatments. In addition, the relationship between the donation amount and the COVID-19 outbreak at the prefecture level is reported in Appendix C.

[17] The participants in the complier treatment also reduced the donation for the store that followed the restriction request. Although it is important to investigate the unclear motivation of their reduction behavior, it is beyond the scope of this study.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.