

From plastic to peace: overcoming public antipathy through environmental cooperation

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Abstract

Citizen distrust towards the rival country is a defining feature of protracted international rivalries, undermining meaningful cooperation that can lead to mutual benefits. How might governments establish a public opinion base that is more supportive of cooperation with the rival country? We argue that information about ongoing environmental cooperation with the rival country makes citizens more supportive of non-environmental cooperation by changing their beliefs about the rival's trustworthiness and facilitating extrinsic reciprocity. We investigate this potential micro-level cooperation spillover in the context of the longstanding rivalry between Japan and South Korea. Our survey-based experiment finds that information about cooperation on marine plastic pollution shapes the public's willingness to cooperate in terms of the economy and security. Importantly, however, we find asymmetric results in Japan and Korea. While Koreans are more receptive to our positive cooperation treatment, which increases their willingness to cooperate in other domains, Japanese respondents react more strongly to the negative non-cooperation treatment, which reduces their willingness to cooperate in other domains. We offer explanations for these divergent reactions based on prior interactions between the two countries. Our findings have important policy implications for conflict-ridden areas of the world beyond East Asia that increasingly face common environmental challenges.

Keywords: environmental cooperation; international rivalry; public diplomacy; security; Japan; Korea

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Introduction

An increasing volume of the literature suggests that trust and reciprocity positively shape public attitudes towards international cooperation in various domains (Chilton, Milner & Tingley, 2020; Tingley & Tomz, 2014). Citizen distrust towards a rival country, however, is a defining feature of protracted international rivalries and a key domestic political obstacle for advancing cooperation with that rival (Baum & Potter, 2008). For any government seeking to meaningfully improve its relationship with a rival country, it is thus of prime importance to foster trust and a sense of cooperative reciprocity among the citizens on both sides of the rivalry.

To this end, the burgeoning literature on public diplomacy has highlighted that sending messages centered on shared values, mutuality, and collaboration (Asaba et al., 2020; Fitzpatrick, 2011; Goldsmith, Horiuchi & Matush, 2021; Zaharna, Arsenault & Fisher, 2014) to foreign citizens can be an effective way to signal trustworthiness and cooperativeness and thus elicit cooperative attitudes. One caveat, however, is that it is difficult to construct and deliver a genuine message of mutuality and collaboration when the actual relationship with the target country is marred by multiple points of conflict and its public takes a hardline stance on these disputes. Existing empirical studies on the effectiveness of public diplomacy have also noted that public diplomacy activities tend to be less effective or even backfire when the prior image of the sender country among the target public is negative (Goldsmith & Horiuchi, 2009; Incerti et al., 2021; Sheafer et al., 2014; Szostek, 2017). Therefore, it is important to consider how governments can build a public opinion base both home and abroad that is more supportive of cooperation with a rival country.

In this study, we borrow the concept of cooperation spillover from the long-standing neo-functionalist approach to inter-governmental cooperation (Haas, 1961; Schmitter, 2005) and apply it at a micro-level (i.e. citizens). We suggest that cooperation with the rival country over less politically contentious issues helps to foster the public's willingness to cooperate in more contentious areas. Drawing on insights from the literature on disaster diplomacy, we target environmental cooperation as an issue area that has the

potential to lead to cooperation spillover at the citizen level. We argue that information about ongoing environmental cooperation with a rival country makes citizens more supportive of non-environmental cooperation via changing their beliefs about the rival's trustworthiness and facilitating extrinsic reciprocity.

We investigate this possible cooperation spillover in the context of the long-standing rivalry between Japan and South Korea (hereafter, Korea). As we discuss in the Case Selection section, the preexisting negative perception of the rival country makes it difficult to achieve meaningful change in public attitudes and beliefs within the two countries. We explore how the awareness of ongoing environment cooperation shapes the willingness of Japanese and Korean citizens to support bilateral cooperation for other issues that are more contested, such as trade and security.

We employ a survey-based experiment that utilizes a nationally representative sample from both sides of the rivalry. In both countries, we establish treatment groups that are exposed to information about the cooperative behavior of the rival country with respect to marine plastic pollution. Marine plastic pollution is chosen as the focal issue for several reasons. First, it is one of the few areas in which cooperation between the two countries has evolved over years. Second, plastic pollution has various widely known human health consequences, thus cooperation to reduce this pollution has tangible benefits for ordinary citizens in both countries. Finally, unlike the strained bilateral relationship, the ongoing cooperation over marine plastic pollution has received scant media attention. This means our treatment is likely to provide new information for most respondents.

To preview, we find evidence for the spillover of cooperative attitudes across issue areas. Information about the cooperation with the rival country on marine plastic pollution affects the willingness to cooperate in terms of the economy and security. This spillover is stronger when information about the cooperation of both policy experts and citizens in the rival country is provided. However, there are key differences in the responses in Japan and Korea. While Koreans are more receptive to our cooperation treatment, which improves their willingness to cooperate in other domains, Japanese respondents react more strongly to the non-cooperation treatment, leading to less interest in cooperation in other

areas.

This study makes three important contributions. First, we extend the public diplomacy literature and broader literature on foreign policy attitudes by suggesting a viable approach to developing cooperation-promoting messages for protracted international rivalries. We suggest that rival country governments can identify a less politically contentious area for ongoing cooperation and deliver messages related to this. The ongoing cooperation should have tangible and easily comprehensible benefits for ordinary citizens, yet it also needs to contain new, unexpected information. Second, our survey experiments in Japan and Korea reveal asymmetric reactions to positive and negative messages between the countries. We believe our study invites future research that systematically maps out and explains this asymmetry using more pairs of rival countries. Lastly, while growing attention has been paid to the role of the environment in fostering peace, ours is one of few studies that has empirically tested this possibility using experimental data on public attitudes to cooperation. Our findings, together with recent findings from the disaster diplomacy literature, are expected to have important policy implications for conflict-ridden areas of the world beyond East Asia that increasingly face common environmental challenges.

Shaping public attitudes towards a rival country

As discussed earlier, citizen distrust of the rival country is a defining feature of protracted international rivalries (Baum & Potter, 2008). Despite the expected mutual benefits from increased cooperation, political leaders who pursue a cooperative policy towards the rival country may be concerned about domestic political repercussions because ‘[a]ny leader that attempts to offer concessions to a rival could be attacked as being weak, or accommodating a dangerous enemy’ (Colaresi, 2004: 557). As Thompson (2001: 562) notes, ‘[r]ivalries develop their own domestic constituencies and those constituencies lobby for maintaining the rivalry.’ For any government that wants to improve the relationship with a rival country, it is thus of crucial importance to establish a public opinion

base that is accepting of cooperative policies.

The literature on public diplomacy provides some useful insights. The literature has long emphasized the importance of reaching out to foreign citizens to win their hearts and minds (Melissen, 2005). Recent public diplomacy research has highlighted the effectiveness of relational messages centered on mutuality, symmetry, and collaboration over undirected messages or propaganda promoting the values and policies of the sender country (Brown, 2013; Cowan & Arsenault, 2008; Fitzpatrick, 2011; Zaharna, Arsenault & Fisher, 2014). It is, however, not easy to construct and convey a genuine relational message when the relationship with the target country is marked by political and economic conflict that the public has taken a hardline stance on. For incumbents with hawkish constituents, touting cooperation with the rival country in state visits, for instance, can be politically costly. It might also backfire as a public diplomacy strategy when the adversarial target public does not buy the message. Existing empirical studies on the effectiveness of public diplomacy also note that public diplomacy activities tend to be less effective when the image of the sender country among the target citizens is negative (Goldsmith & Horiuchi, 2009; Incerti et al., 2021; Sheafer et al., 2014; Szostek, 2017). Thus, governments need to devise an effective strategy for establishing a public opinion base both home and abroad that is more supportive of cooperation.

A recent study by Asaba et al. (2020) suggests that relational messages highlighting multilateral cooperation against a common enemy can influence the cooperative intent of citizens. They find that showing a short video clip on trilateral military cooperation (involving the US, Japan, and Korea) against the North Korean threat made Japanese citizens more willing to cooperate not only with the US but also with Korea in a variety of fields including the economy and environmental protection. We believe that the video message effectively highlighted for the Japanese public the importance of cooperating with Korea, which, in turn, increased their willingness to cooperate in areas outside of military action.¹⁾

We build on this line of inquiry and suggest another viable approach to constructing

¹⁾They find that the same video message does not have a significant effect in Korea.

a relational message that can establish a cooperative public opinion base. In doing so, we borrow the concept of cooperation spillover from the long-standing neo-functional approach to inter-governmental cooperation (Haas, 1961; Schmitter, 2005) and apply it at a micro-level by focusing on citizens. We suggest that rival countries who are at conflict in high politics can utilize ongoing yet less publicly salient cooperation in soft issue areas to ameliorate mutually public hostility and generate cooperative intent in other areas where the relationship is more strained. While Asaba et al. (2020) reminded the public of a common security threat and thereby highlighted the importance of cooperation with the rival country, we suggest that previously unknown information about soft issue cooperation can initiate cooperation spillover by challenging and ultimately changing the public's beliefs about their rival's intentions.

This change in attitude among citizens is important from a social psychology perspective because most people act as 'conditional cooperators,' whose contribution is positively correlated with their beliefs about the contribution of others (Fischbacher, Gächter & Fehr, 2001). That is, when citizens who receive a message about soft issue cooperation reconsider their attitudes toward the cooperativeness of the rival country, they become more willing to cooperate themselves. A recent experimental study has also suggested that these cooperative attitudes then diffuse into other areas, with cooperation in one domain creating 'a channel through which cooperative behavior is affected even beyond the scope of the institution' (Engl, Riedl & Weber, 2021).

Of course, it may be difficult to instill a fundamental change in beliefs when the preexisting distrust is strong. We suggest that, even without a change in deep-rooted beliefs, a relational message signaling cooperativeness can trigger a reaction of reciprocity and thus contribute to the establishment of an amicable public opinion base. That is, citizens may regard their cooperation in high politics as a rational reciprocal response to a rival country's cooperation in low politics. Indeed, Tingley & Tomz (2014) find that the public is willing to positively reciprocate the cooperative behavior of foreign countries in one domain (such as in reducing climate change) by offering cooperation in other domains (such as foreign aid and trade) while punishing the uncooperative behavior of others by

refusing to cooperate in other areas. This ‘extrinsic reciprocity’ via issue linkage (Tingley & Tomz, 2014) works based on rationality and can be independent of any change in beliefs (Swärd, 2016).

Note that we do not regard the two mechanisms as mutually exclusive. Extrinsic reciprocity could be an immediate mechanism that triggers cooperation spillover, after which changes associated with trust could emerge. It is also possible that extrinsic reciprocity is the more dominant mechanism among individuals with lower trust. Therefore, in this study, we do not aim to evaluate which of the two mechanisms is the primary driver. Rather, we seek to theorize what constitutes an effective trigger of cooperation spillover and empirically investigate whether the trigger works. In the next section, drawing on the literature on disaster diplomacy, we zoom in on environmental cooperation as an issue area that has the potential to trigger cooperation spillover at the citizen level.

Effective triggers for cooperation spillover: focusing on environmental cooperation

In prolonged international rivalries, it is difficult to change the negative attitudes of the public towards the rival country’s intentions, which is why an effective trigger that can initiate cooperative reciprocation and changes in beliefs is needed. In this vein, a strand of literature has drawn attention to post-disaster cooperation as a potentially powerful means to challenge public stereotypes. Post-disaster cooperation highlights the previously unexpected willingness and ability of rival countries to work together towards a common cause. The literature also notes that cooperation in times of natural disasters can initiate a virtuous cycle of cooperative reciprocity known as ‘tit-for-tat disaster diplomacy’ (Kelman, 2006; Koukis, Kelman & Ganapati, 2016). For example, though Greece and Turkey have historically acted as rivals, the reciprocal emergency assistance in response to earthquakes in Turkey and Greece in 1999 changed the image of the rival in these countries (Akcinaroglu, DiCicco & Radziszewski, 2011). It further legitimized the political rapprochement process and augmented trade and investment activity between the two

countries (Ganapati, Kelman & Koukis, 2010; Koukis, Kelman & Ganapati, 2016).

While post-disaster cooperation may be a powerful trigger for cooperation spillover, natural disasters as exogenous shocks are rare. This limits the opportunity for governments to utilize disaster diplomacy to create an atmosphere conducive to cooperation with a rival country. In this study, we argue that cooperation over environmental problems shared by rival countries can be used to generate cooperation spillover. Of course, not all types of environmental cooperation are likely to be equally effective in triggering cooperation spillover. In light of past studies, we expect environmental cooperation that meets the following two key conditions would be particularly effective.

First, it has been suggested that post-disaster cooperation leads to changes in public attitudes by demonstrating the rival country's compassion regarding human suffering in the disaster-hit country (Akcinaroglu, DiCicco & Radziszewski, 2011). We similarly expect that environmental cooperation that provides tangible benefits for human lives can serve as an effective trigger. In Jägerskog (2009)'s study on the potential for water cooperation in the Jordan River Basin among Jordanians, Palestinians, and Israelis to encourage collaboration in other areas, no significant cooperation spillover is found. He notes that the public was not aware of the expected benefits of this cooperation and concludes that, for cooperation in one area to spark further cooperation in other areas, 'the benefits must be apparent to a broader public' (Jägerskog, 2009: 640). We thus expect that cooperation to mitigate environmental problems with widely known negative effects on humans (e.g., diseases) can be an effective trigger for cooperation spillover.

Second, information challenges stereotypes when it comes as a surprise to the recipients of that information. Post-disaster cooperation, for instance, sends an unexpected signal of cooperativeness, which stands in stark contrast to the more familiar messages of conflict and disagreement between rivals. Similarly, environmental cooperation can challenge negative stereotypes when it is previously unknown to and unanticipated by the public. Environmental cooperation led by technocrats and the scientific community tends to receive little media attention due to its technical and depoliticized nature. We argue that highlighting this expert-level cooperation and its benefits can be an effective

trigger for cooperation spillover. This is also in line with political communication analysis that suggests influencing public opinion using strategic framing is easier when the message concerns a remote and unfamiliar issue (Chapman & Gerber, 2019; Entman, 1989).²⁾ We expect environmental cooperation that meets these two conditions to be an effective trigger for spillover in citizens' cooperative attitudes toward the rival country.

Case selection: the Japan-Korea rivalry

We test our expectations using the Japan-Korea relationship. It can be regarded as a hard case for bringing about changes in the attitudes citizens toward each other country due to the long-standing mutual hostility between the two countries (Asaba et al., 2020: 261). Their bilateral relationship has long been marred by diplomatic conflict over their colonial past. Their relationship further deteriorated in 2018 when the Korean Supreme Court ordered Japanese companies involved in wartime forced labor to compensate Korean laborers. In 2019, Japan imposed export restrictions on electronics materials essential to the Korean semiconductor industry, which escalated into a trade war involving nationwide boycotts and several WTO disputes. Despite the mounting material cost of the trade war, the governments on both sides remain firm in their initial positions (as of April 2022).

According to a recent survey, only 11% of the Japanese and 17.5% of South Koreans reported having a positive feeling toward each other as a people; trust in each other's politicians was even lower, with only 2.5% of Japanese respondents saying that they trusted the South Korean President and only 0.9% of Koreans trusting the Japanese Prime Minister.³⁾ This widespread distrust represents a major obstacle for cooperation and a challenge for governments who want to resolve costly rivalry disputes without political repercussions. Thus, determining how to encourage citizens to become more willing to cooperate and to reconcile with the rival country is an important consideration.

²⁾In this vein, cooperation in popular culture (e.g., joint cultural events) might not be as effective as a trigger for cooperation spillover at the citizen level because, even in the context of international rivalries, these interactions are less likely to come as a surprise to the public.

³⁾KBS World (10 September 2020), https://world.kbs.co.kr/service/news_view.htm?lang=e&Seq_Code=156186

At the same time, if we confine the scope of our inquiry to rival dyads, the Japan-Korea rivalry represents one of the more likely cases in which information on environmental cooperation could generate citizen-level cooperation spillover. This is in light of existing research identifying routine rivalry-related violence as a key obstacle to changing public attitudes via post-disaster cooperation (Akcinaroglu, DiCicco & Radziszewski, 2011).⁴⁾ The Japan-Korea rivalry is one of a few enduring rivalries that involve jointly democratic countries (Hensel, Goertz & Diehl, 2000) and, for decades, there has been no violent interaction endangering ordinary citizens. As most contemporary disputes among rivals take the form of non-violent conflict (Diehl, Goertz & Gallegos, 2021), we also cautiously expect our findings from the Japan-Korea rivalry to have implications for many other rivalries.

In this study, we take advantage of the fact that Japan and Korea have maintained and expanded their environmental cooperation despite the deteriorating bilateral relationship since 2018. Due to their geographical proximity, Japan and Korea face many similar environmental issues. One of such issues is marine pollution in the Sea of Japan/East Sea, the body of water that separates the two countries.⁵⁾ The effort by Korea and Japan to reduce marine plastic pollution has been taking place for years on an institutional basis, not a short-term, isolated project. Since 2008, to jointly tackle marine pollution, the two countries have institutionalized and strengthened their cooperation under the Action Plan for the Protection, Management and Development of the Marine and Coastal Environment of the Northwest Pacific Region (NOWPAP), which is part of the UN Environment Programme's Regional Seas Program.⁶⁾

In the previous section, we identified two conditions that are required for environmental cooperation to be an effective trigger for cooperation spillover. Marine plastic

⁴⁾The authors investigate how natural disasters shaped the Greece-Turkey (the 1999 earthquake in Turkey) and Pakistan-India (2005 earthquake in Kashmir) rivalries and find that rapprochement was observed in the former but not in the latter due to a high level of communal violence that affected ordinary citizens.

⁵⁾The two countries even dispute the name of this body of water; Nikkei Asia (18 November 2020), <https://asia.nikkei.com/Politics/International-relations/Tokyo-makes-headway-on-keeping-Sea-of-Japan-the-global-standard>

⁶⁾<https://www.unenvironment.org/nowpap/what-we-do/prevent-and-reduce-pollution/marine-litter-and-microplastics>

pollution meets both of these conditions. First, marine plastic pollution is personally relatable to ordinary citizens. Although the cooperation between Japan and Korea on the problem has received scant media attention, plastic pollution is a salient issue in both countries. The seriousness of marine plastic pollution itself has received significant media attention in both countries due to its direct negative consequences for human health. It has been reported that the consumption of plastic debris threatens marine organisms and can lead to toxic exposure to chemicals for those who eat significant amounts of seafood. In the long term, this toxic exposure may lead to deleterious health conditions, including cancer and weakened immune function.

In both countries, new government regulations to reduce the volume of plastic waste have also increased public awareness of plastic pollution. In Korea, the government has banned the use of disposable plastic bags at all supermarkets that are 165m² or larger since January 2019; in Japan, the government introduced charges for all plastic bags (around 3 cents for a standard bag) in July 2020.⁷⁾ In fact, a survey conducted in 2018 revealed that 95% of Koreans think plastic waste is a serious problem.⁸⁾ In Japan, a survey conducted in 2019 reported that 89% of Japanese citizens are interested in the issue of plastic waste.⁹⁾ For health-savvy citizens of both countries, the cooperation to reduce plastic pollution is thus expected to generate tangible benefits in terms of health and the environment. Therefore, it is more likely that ordinary citizens in the two countries will view the cooperative behaviors of their rival in this area as more valuable than in other areas that are more remotely and indirectly related to their wellbeing.

Second, prior knowledge of this cooperation is expected to be low among most citizens in the two countries. This is because, in both countries, this bilateral cooperation on marine pollution receives little media attention and is not well-known to the public. Rather, information presented on the rival country's foreign policy behavior in the media is predominantly negative. Since this cooperation is led by technocratic elites and policy

⁷⁾Yonhap News Agency (2 September 2019), <https://en.yna.co.kr/view/AEN20190902003600315>, Japan Times (3 January 2020), <https://www.japantimes.co.jp/news/2020/01/03/national/awareness-issue-plastic-garbage-japan-slowly-gaining-steam/>

⁸⁾<https://www.yna.co.kr/view/MYH20190402015400038>

⁹⁾<https://survey.gov-online.go.jp/r01/r01-kankyuu/2-1.html>

experts from the respective environment ministries of the two countries, it has been sheltered from the worsening diplomatic relations. However, at the same time, the lack of politicization has translated into low public awareness. Therefore, unexpected positive information about the cooperative behavior of the rival country should send a fresh signal that the rival country can commit to cooperation.

Thus, this study expects that if Japanese and Korean citizens were informed about the ongoing cooperation on marine plastic pollution, they become more willing to cooperate in other areas, in which the bilateral relationship is more strained. Our main hypothesis is thus as follows:

Hypothesis 1 Respondents informed about the ongoing expert-level cooperation on marine plastic pollution will exhibit higher support for cooperation in other domains than those who do not receive the this information.

As mentioned above, most of the actual environmental cooperation between Japan and Korea has been inter-governmental and led by technocratic elites or policy experts from the respective environmental ministries. In the case of Japan-Korea rivalry featuring deep-rooted distrust towards rival citizens and elected politicians (recall the recent poll mentioned above), such factual information about this ongoing cooperation might have a limited effect on building trust or eliciting reciprocity towards the rival country. To change the public's belief about the trustworthiness of the rival country, it may be important to signal the cooperative intent of the rival country's citizens rather than policy experts only. In fact, [Cowan & Arsenault \(2008\)](#) has pointed out that the trust-generating effect of collaboration can be greater when the collaboration occurs at the citizen level. Therefore, we distinguish two types of information in signaling the rival country's cooperativeness: 1) information about expert-level environmental cooperation and 2) information about whether the rival country's citizens are supportive of this environmental cooperation. Based on this, we propose the following hypothesis:

Hypothesis 2 Respondents informed about the rival country's citizen-level cooperativeness in addition to expert-level cooperativeness on marine plastic pollution will

exhibit stronger support for cooperation in other domains than those who receive neither information.

What if rival country’s citizens appear unwilling to protect the environment despite the ongoing environmental cooperation among policy experts? How might citizens react when provided with information that citizens of the rival country are not on board with the expert-level cooperation? Existing studies have found that, in terms of affecting the trust in counterparts, negative information about those counterparts has a stronger impact than positive information (Poortinga & Pidgeon, 2004). That is, ‘trust is easier to destroy than to create’ (Slovic, 1993: 677). Combining this with collaborative approaches in public diplomacy, it could be expected that, in attempting to influence cooperation spillover, the negative impact of uncooperative behaviors would be stronger than any positive impact of cooperative behaviors. The feeling of extrinsic reciprocity may also be stronger in punishing the counterpart’s non-cooperation than in rewarding their cooperation. We thus propose the following hypothesis:

Hypothesis 3 Respondents informed about the rival’s citizen-level uncooperativeness regarding marine plastic pollution despite the expert-level cooperation will exhibit weaker support for cooperation in other domains than those who receive neither information.

Research design

To test our hypotheses, we designed a survey experiment that involved two information treatments. The surveys were conducted online between February 21 and March 1, 2021, for the Japanese survey and between February 9 and February 18, 2021, for the Korean survey. To recruit survey participants, we asked Rakuten Insight and Dynata to send an invitation respectively to Japanese and Korean respondents in their online panel. Those who were interested in our surveys were directed to our Qualtrics survey website. Eligible participants were those over the age of 18 who were Japanese nationals for the

Japanese survey or Korean nationals for the Korean survey. We received a total of 3239 respondents: 1643 Japanese nationals and 1596 Korean nationals.

Our experimental design produced six experimental groups, including the control group: 2 groups (Treatment 1) \times 3 groups (Treatment 2). The experimental section of the survey had the following design. (See Appendix A for details on the survey design.) We first presented to all respondents information explaining that marine plastic pollution is a common environmental problem for the two countries: ‘The level of plastic pollution in the Sea of Japan/East Sea surrounding Korea and Japan is one of the highest in the world. Due to the circulation of the ocean currents, plastic waste from Korea and Japan reaches the coastal waters of the other country, posing a common challenge for the two countries’.

For Treatment 1, information on the actual, ongoing expert cooperation on this issue was then introduced. It stated that ‘To tackle this problem, policy experts from both governments have actively cooperated under the UN framework. This cooperation in recent years has helped implement joint solutions. At last year’s meeting, policy experts from the two countries expressed deep appreciation for the other country’s cooperation.’ Treatment 1 was provided to half of the respondents. The remainder of the respondents, the control group, did not receive any information about the ongoing cooperation.

We then informed all of the respondents of a hypothetical government policy proposal on plastic bottle taxes. The respondents are told that ‘To address marine plastic pollution, both the Japanese and Korean governments are considering imposing taxes on disposable plastic containers. Tax revenues will be used for Japan-Korea collaborative projects to reduce marine pollution. The tax per 500 ml bottle discussed by the governments is up to 20 yen/200 won.’ After this information, we inserted Treatment 2. Here, we created two treatment groups that were provided with a hypothetical piece of information on how much tax the rival country’s public was willing to pay per bottle. A third of the respondents received a positive cue (i.e. a high willingness to pay): ‘The same survey in Korea/Japan found that Korean/Japanese citizens were willing to pay 18 yen (about 180 won)/ 180 won (about 18 yen) in tax per 500 ml plastic bottle.’ Another third of

the respondents received a negative cue (i.e. a low willingness to pay): ‘The same survey in Korea/Japan found that Korean/Japanese citizens were willing to pay 2 yen (about 20 won)/ 20 won (about 2 yen) in tax per 500 ml plastic bottle’. The rest, the control group, did not receive any information about the rival public’s willingness to pay. The above common and treatment information was presented as text on a single page.

Our main inquiry focuses on the effect of the treatments on the intent to cooperate in other, non-environmental areas. To this end, we asked the respondents about their attitudes towards cooperating with Korea/Japan on four areas in a randomized order: human exchange, trade, investment, and security. More specifically, respondents were asked to select one of the following options that best represented their opinion about their own country’s policy regarding the respective issue: (1) should decrease the level of cooperation with Japan/Korea, (2) should maintain the current level of cooperation with Japan/Korea, and (3) should increase the level of cooperation with Japan/Korea. As discussed in the next section, responses to these questions are used as the main dependent variables in our analysis. We also asked their willingness to reconcile over the ongoing historical dispute over the compensation for wartime forced labor and the territorial dispute over *Takeshima/Dokdo* Islands.

To ensure the valid analysis of the survey data, we adopted the following approaches. First, following [Aronow, Baron & Pinson \(2019\)](#), we employed an attention check question in the survey to ensure the quality of the sample.¹⁰⁾ In the question, survey respondents were asked to select ‘Please select “Somewhat disagree”.’ A total of 166 Japanese respondents and 249 Korean respondents failed to follow our instructions, thus we dropped those respondents from our analysis, considering them to be inattentive respondents. Second, because our sample did not exactly replicate national-level demographics, we weighed the data from both samples so that it corresponded to the distribution of the latest census data in 2015 in terms of three key variables: gender, age, and region (based on 5 and 6 regions for the Korean and Japanese samples, respectively). We employed the weighted sample throughout our analysis, both in the main text and in the Appendix. This means

¹⁰⁾We also asked manipulation check questions and the result is presented in the Appendix B.

that both samples used for our analysis are representative of the national-level demographics in terms of gender, age, and region.

Findings

Analysis across issues

As discussed in the previous section, we are interested in how information about bilateral cooperation on marine plastic pollution influences public support for cooperation in non-environmental areas. Our primary dependent variable is the overall support for cooperation across four non-environmental areas: human exchange, trade, investment, and security. The variable, *Overall Cooperation*, is measured using the principal component score (PCS) from principal component analysis (PCA). Note that PCA is performed separately for each country sample, so the levels are not directly comparable between countries. In both, we use the loadings of the first principal component.¹¹⁾

In models where *Overall Cooperation* is the dependent variable, we run linear regression models. Later in this section, we also present the results for each issue area, which allows us to examine whether and how the spillover effect differs between issues. All of our models include a set of control variables that includes gender, age, education level, income level, attitude toward domestic environmental pollution, attitude toward international environmental issues, favorability towards the rival (Korean/Japanese) citizens, favorability towards the rival (Korean/Japanese) government, prior knowledge on marine plastic pollution, and political ideology.¹²⁾

We begin by testing Hypothesis 1, which centers on the effect of expert cooperation ('Expert Coop.'). Our results are summarized in Table I. Note that the information treatment related to citizen-level cooperation is added for now as a control variable. The key variable 'Expert Coop.' is significant at the 90% level in the Korean sample but not in the Japanese sample. The bars in Figure 1 visualize the predicted values of

¹¹⁾The proportion of the variance of the first principal component is very similar between the Japan and Korean samples (0.696 and 0.651 respectively; see Table A.V) in the Appendix C.

¹²⁾Descriptive statistics for these variables are available in Appendix F.

Table I. Regression table for Figure 1

	Sample			
	Japanese		Korean	
Key variables				
Expert cooperation	0.034	(0.069)	0.161	(0.080)*
Control				
Mass uncooperativeness	-0.165	(0.084)*	-0.071	(0.099)
Mass cooperativeness	0.040	(0.083)	0.182	(0.098)†
Female	0.259	(0.072)**	0.129	(0.081)
Age	-0.009	(0.002)**	0.012	(0.002)**
Education	-0.008	(0.038)	-0.032	(0.041)
Income	0.003	(0.002)	0.002	(0.002)
Env. attitude (dom.)	0.060	(0.060)	0.011	(0.064)
Env. attitude (intl.)	0.307	(0.056)**	0.095	(0.062)
Feeling (govt.)	0.016	(0.002)**	0.016	(0.002)**
Feeling (people)	0.025	(0.002)**	0.019	(0.002)**
Knowledge	0.104	(0.066)	-0.103	(0.078)
Ideology	-0.076	(0.021)**	0.078	(0.022)**
Constant	-2.436	(0.336)**	-2.213	(0.396)**
Observations	1,477		1,347	
R^2	0.383		0.255	
Adjusted R^2	0.378		0.248	
Residual std. error	1.292		1.412	
F statistic	69.861		35.168	

†: $p < 0.1$; *: $p < 0.05$; **: $p < 0.01$

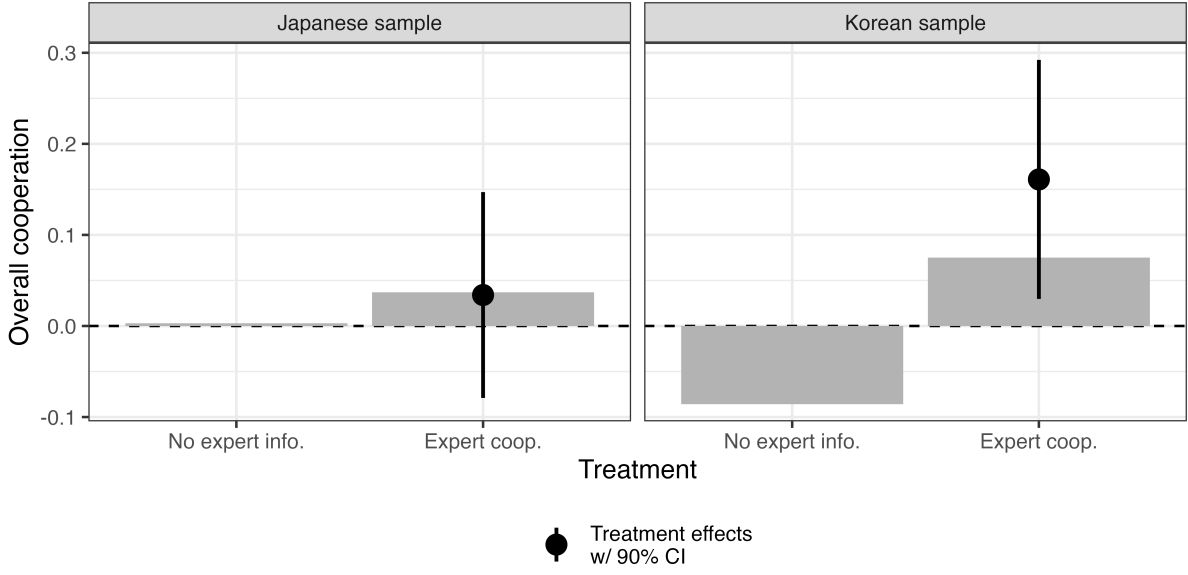
Outcome variable is principal component scores.

Overall Cooperation in the scenario where all other control variables are set at their mean values and no information on citizen-level cooperation is given. In each country sample, the bars on the right and left show the predicted *Overall Cooperation* when expert-level information is provided or not provided, respectively. In both countries, support for *Overall Cooperation* increases if they are informed of expert cooperation. The increase is greater for Korean citizens. The dots with vertical lines indicate the average treatment effect (ATE) of ‘Expert Coop.’ on *Overall Cooperation* with 90% confidence intervals.¹³⁾ The ATE is statistically significant only in the Korean sample. We thus find mixed support for Hypothesis 1.

Interestingly, as shown in Table I, the information on citizen-level cooperation included

¹³⁾Considering the moderate sample size per experimental group (approx. 250) we plot 90% confidence intervals throughout the analysis.

Figure 1. Effect of expert cooperation (overall cooperation)

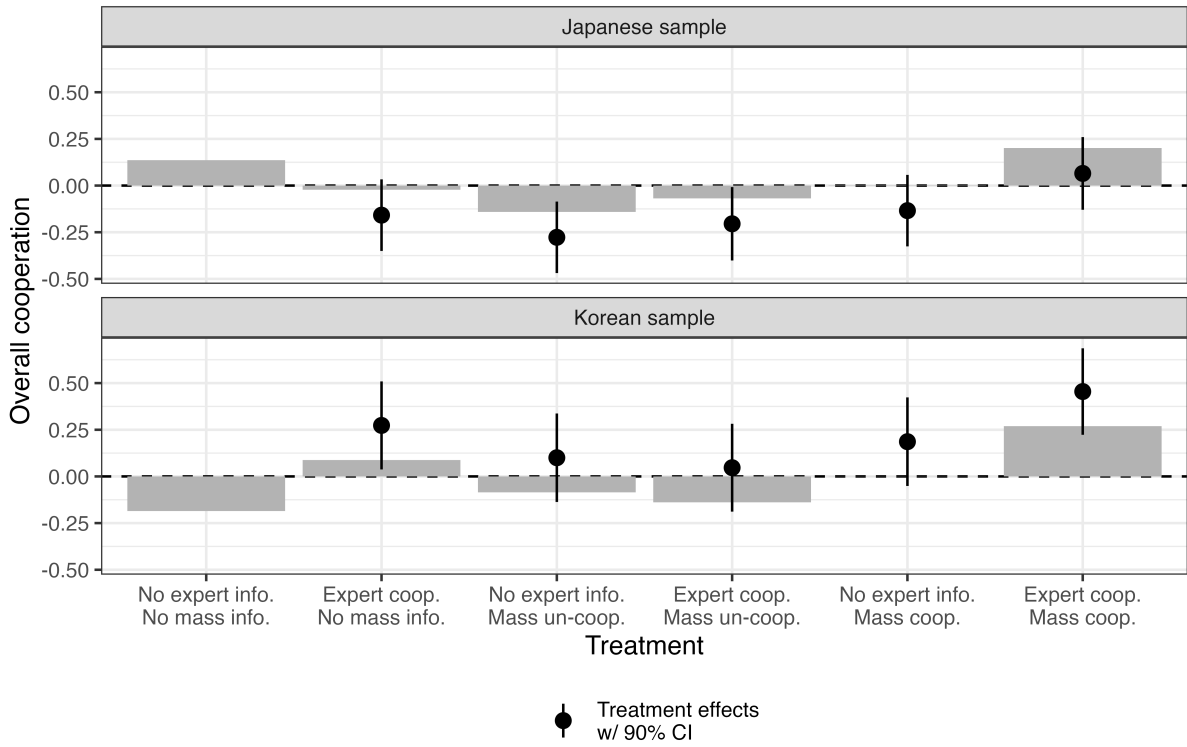


as a control variable has a distinct effect in the two countries. ‘Mass Coop.’ has a significant positive effect on *Overall Cooperation* only in the Korean sample while ‘Mass Un-Coop.’ has a significant negative effect on *Overall Cooperation* only in the Japanese sample, reflecting a potentially asymmetric response to the same treatment.

To further examine how the information about citizen-level cooperation interacts with the information concerning expert-level cooperation (i.e. Hypotheses 2 and 3) to affect cooperation spillover, we estimate *Overall Cooperation* between the experimental groups. The results are reported in Table A.VI and visualized in Figure 2 in terms of the predicted values of *Overall Cooperation* for each group.¹⁴⁾ In assessing Hypothesis 2, we first compare the ‘Expert Coop. and Mass Coop.’ category on the right side of the figure to the control group, which receives neither information treatment, on the left side. In Japan, while the support for cooperation is slightly higher than that of the control group, the ATE is not statistically significant. In contrast, for Korean citizens, support for cooperation in the ‘Expert Coop. and Mass Coop.’ group is noticeably higher than the control group, and the ATE is also statistically significant. As with Hypothesis 1, Hypothesis 2 is supported only in the Korean sample.

¹⁴⁾In the analysis for Figures 2-3, we compared the control and five treatment groups, which could lead to Type-1 fallacies. In order to deal with the multiple testing problem, we adjusted the significance level (α) using Bonferroni correction. In the Appendix D, we present results using $\alpha = 0.02$, which is one-fifth

Figure 2. Effect of expert and mass-level cooperation (overall cooperation)

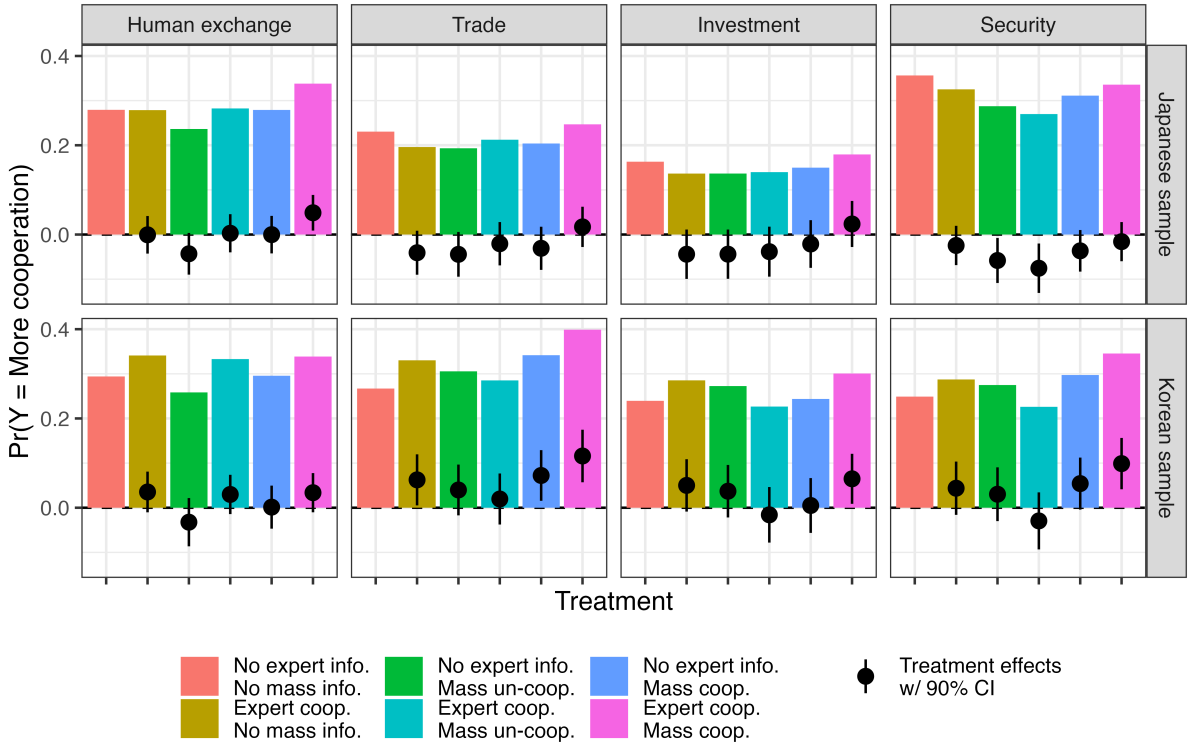


To evaluate Hypothesis 3, we compare the ‘Expert Coop. and Mass Un-Coop.’ group (the fourth bar) with the control group. In line with H3, Japanese citizens are less supportive of cooperation when made aware of the rival population’s uncooperativeness, despite the presence of expert-level cooperation. The ATE shows that this negative effect is statistically significant at the 90% level. In Korea, however, this negative effect is not observed; the ‘Expert Coop. and Mass Un-Coop.’ group exhibits almost the same level of support for *Overall Cooperation* as the control group. Hypothesis 3 is thus supported only among the Japanese public.

The results in other categories are also useful for understanding differences between the two nationalities. In Japan, the ‘No Expert Info. and Mass Un-Coop.’ group (the third bar) exhibits the lowest level of support for *Overall Cooperation* followed by the ‘Expert Coop. and Mass Un-Coop.’ group. This finding, together with their lack of response to expert cooperation information, indicates that the Japanese public is more responsive to the negative information treatment (i.e. the uncooperativeness of their

of the $\alpha = 0.1$ employed for Figures 2-3. Our main findings hold.

Figure 3. Effect of expert and mass-level cooperation by issue



rival) than the positive information treatment. This is in contrast to the results from the Korean sample. In Korea, the level of *Overall Cooperation* in the ‘No Expert Info. and Mass Un-Coop.’ group is not statistically different from the control group. That is, the Korean public is more responsive to positive information than negative information.

Analysis by issue

We also explore how the size and direction of cooperation spillover vary by issue area. Because the dependent variable is a three-category ordered measure, we estimate a series of ordered logit models and visualize our findings in Figure 3. Each bar indicates the predicted probability of the respondents choosing ‘3. Should increase the level of cooperation with Japan/Korea’ by experimental group. Again, the dots and vertical lines indicate the ATE with a 90% confidence interval. It can be observed that the Korean respondents express higher support for cooperation than do the Japanese respondents across the issue areas except for security.

Looking more closely at the Japanese sample, the cooperation-generating effect of

positive information is observed in the domain of human exchange but not in the other domains. That is, it is only with regards to human exchange that the ‘Expert Coop. and Mass Coop.’ group (which is the focus of H2) exhibits a significantly higher probability of support for more cooperation than the control group. Furthermore, the cooperation-reducing effect of negative information is more pronounced across all domains. The negative effect of ‘Mass Un-Coop.’ is especially strong for security; it can be observed that the green- and aqua-colored bars are substantially lower than the others. See Table A.VII for the full results.

In the Korean sample, the effect of the ‘Expert Coop. and Mass Coop.’ treatment combination is positive across all issue areas but human exchange. This positive effect is stronger in the more contentious domains of trade and security. In addition, in Korea, information on citizen-level cooperation alone (i.e. ‘No Expert Info. and Mass Coop.’) appears to foster a willingness to cooperate on security and trade issues (see the blue-colored bars). Overall, the results for each issue area individually are consistent with our earlier findings in that the Japanese public reacts more strongly to the negative information treatment, and the Korean public is more receptive to the positive information treatment. See Table A.VIII for the full results.

In the Appendix, (Figure A.1 and Table A.IX), we also report and discuss the effect of our treatments on public attitudes towards two ongoing historical conflicts: the conflict over the compensation for wartime forced labor and the conflict over the Takeshima/Dokdo Islands.¹⁵⁾

Discussion

Our analysis consistently finds that Koreans are more receptive to our positive information treatments designed to generate the intent to cooperate in other areas. In contrast, the Japanese respondents are more responsive to the negative information treatment, which undermines the intent to cooperate in other domains. In Japan, we observe

¹⁵⁾In the Appendix, we further investigate whether the effect of our information treatments varies according to individual-level characteristics including partisan identification (Figure A.2 and Table A.X) and environmental attitude (Figure A.3 and Table A.XI).

positive cooperation spillover only for human exchange (i.e. another soft issue cooperation). What might explain the results?

One possible explanation might be that Korean respondents are more concerned about environmental problems than are Japanese respondents and value the rival public's cooperation on environmental affairs more. However, our results are unlikely to be driven by a difference in the perceived value of environmental cooperation. The vast majority of each sample (1064 and 1033 Japanese and Koreans, respectively) were concerned about environmental issues. And, as we report in Figure A.3 and Table A.XI in the Appendix, our asymmetric treatment effects were clearly visible in this group.

In this section, we present two tentative explanations for the asymmetric results. First, existing studies have found that the relationship between trust and cooperation is stronger when higher costs are associated with a partner taking advantage of one's own cooperation (Balliet & Van Lange, 2013). That is, trust-building has a more substantial cooperation-inducing effect when a partner's non-cooperative behavior is expected to cause greater harm to one's own welfare. When a partner's non-cooperation is seen as not so costly, high- and low-trust individuals behave similarly (Parks & Hulbert, 1995). Our findings might be explained from this perspective. Citizens of both countries might view Japan–Korea relations as a rather asymmetric rivalry based on the colonial legacy. Also, from an economic perspective, Japan, with its larger economy and G7 membership, has a stronger position. If so, the perceived costs of Japan (the superior rival) not cooperating with Korea may be greater to Koreans than the perceived costs of Korea (the inferior rival) not cooperating with Japan to the Japanese. This may be why the same piece of information designed to instill trust has a more positive effect on cooperation among Koreans.

This explanation, however, does not account for the Japanese respondents' strong reaction to our citizen-level non-cooperation information treatment (i.e. Mass Un-Coop.). We suggest that another driver of the diverging reactions in Japan and Korea is how their prior interactions have been interpreted within each country. The Korean public tends to distrust Japan's willingness to cooperate, insisting that Japan never sincerely

apologized over historical issues and do not have the intention to do so. Thus, Japan's cooperative gestures in the environmental domain may allow Koreans to reconsider their beliefs regarding Japan's motives.

In Japan, however, the mainstream view on the previous, failed attempts at reconciliation is that Korea lacks credible commitment (Fearon, 1994)¹⁶⁾; in particular, a new government with a different domestic political base is unlikely to abide by a deal reached by the previous administration.¹⁷⁾ Japanese unresponsiveness to Koreans' cooperative intent can be understood along this line of explanation. The 'Expert Coop. and Mass Un-Coop.' treatment (the focus of H3) may provoke among the Japanese public a sense of betrayal and reaffirm the perceived lack of credibility in Korea's cooperative gestures. To truly sway Japan's public opinion, information that mitigates a commitment problem will be needed.

Admittedly, our survey experiment does not contain questions that allow us to empirically test these explanations. To qualitatively assess their plausibility, we conducted focus group discussions (FGDs) with university students. In Korea (Seoul) and Japan (Kyoto), social science undergraduates came to a 30-minute discussion session after taking our survey. We provide the questionnaire used in the FGDs in the Appendix E.

In our FGDs, the first explanation received little support. In both countries, students regard Japan and Korea as 'equal' rivals in terms of economic power. A student from Korea said 'even though some educated people might be aware of the difference between the two countries in terms of some objective indicators such as GDP per capita, I don't think they think of the rivalry in these terms. They think we are equal.' Similarly, a student from Japan noted 'I have never regarded Korea as inferior to Japan in terms of economic power. Japan and Korea gain equal benefits from bilateral cooperation as neighboring countries.'

The second explanation received more support from students in both countries. A student from Korea pointed out that 'While [the Korean government] has taken mixed

¹⁶⁾Yomiuri Shimbun Online (12 June 2019), <https://www.yomiuri.co.jp/editorial/20190612-0YT1T50041/>

¹⁷⁾Mainichi Shimbun (12 December 2019), <https://mainichi.jp/premier/politics/articles/20191211/pol/00m/010/001000c>

positions and gestures, [the Japanese government] has always been bad to us, which is why a small positive gesture from Japan might move Koreans.’ In Japan, a student said ‘the image of Japan in Korea already bottomed out because of its consistent hostility, so positive information can somewhat improve the image. Perhaps, the image of Korea is kind of bad but has not bottomed out in Japan, and thus negative information might had an effect of confirming the bad image amongst the undecided.’

University students who participated in our FGDs represent the younger generation in both countries. We also held discussions with two senior scholars specializing in East Asian politics, who were asked to freely reflect on our FGD results and the two explanations we propose.¹⁸⁾ Our discussions with senior scholars pointed to the Korean government’s inconsistent policies towards Japan as contributing to the commitment problem in bilateral relations, which lends support to the second explanation. Interestingly, both scholars pointed out that there is a generation gap in understanding the rivalry, especially in South Korea. One of the scholars in his 60s said ‘Koreans of the older generation still have a victim mindset from the colonial past so probably regard Korea as an inferior side. But it seems young people in their 20s see Japan very differently from how our generation sees Japan.’ The remark suggests that our first explanation might still be valid when looking to understand the older generation’s responses to our information treatments.

Conclusion

Citizen distrust towards the rival country is commonly observed in protracted international rivalries, thus undermining the pursuit of meaningful cooperation for mutual benefits. In order to understand how governments can nurture a public opinion base that is more supportive of cooperation with the rival country, this study borrows the concept of cooperation spillover from the neo-functional approach to inter-governmental cooperation and applies it to the citizen level. We predicted that information about ongoing environmental cooperation with the rival country would increase the support

¹⁸⁾We thank Dae Seok Choi at Ewha Womans University and Intaek Han at Jeju Peace Institute for their valuable insights.

among citizens for non-environmental cooperation by changing their beliefs about the rival's trustworthiness and promoting extrinsic reciprocity.

We investigated this potential micro-level cooperation spillover in the context of the long-standing rivalry between Japan and Korea. Our survey-based experiment found that information about cooperation on marine plastic pollution shaped the public's willingness to cooperate in terms of the economy and security. Importantly, however, we found asymmetric results in Japan and Korea. While Koreans were more receptive to our positive cooperation treatment, which increased their willingness to cooperate in other domains, Japanese respondents reacted more strongly to the negative non-cooperation treatment, which reduced their willingness to cooperate in other domains.

Our study makes three major academic and practical contributions. First, we suggest a viable strategy for overcoming public antipathy in international rivalries and thereby shed new light on the broad literature on public diplomacy and foreign policy attitudes. Our finding from the Korean sample shows that publicizing cooperation with the rival country over less politically contentious issues such as the environment can develop a public opinion base that is more supportive of collaboration in other, more contentious areas such as security. This suggests that a government seeking to improve the relationship with the rival country can strategically link low politics cooperation and hard politics agendas when communicating with both domestic and foreign citizens. This way, the government can trigger issue spillovers in public attitudes towards rivalry cooperation. Considering that our theory on cooperation spillover presumes ongoing cooperation in low politics, our findings are especially relevant to the burgeoning literature on non-violent rivalries (Diehl, Goertz & Gallegos, 2021; Lim & Tanaka, forthcoming).

Second, our study is one of few studies that empirically examined the role of the environment in fostering peace. While the empirical section of the paper focuses on the specific case of the Japan–Korea rivalry, the findings might be generalizable to other conflict-ridden areas of the world that increasingly face shared environmental challenges. For example, in Asia, transboundary air pollution (e.g., PM2.5) has become increasingly serious. Moreover, the risk of extreme weather events is increasing for Asian and Pacific

countries.¹⁹⁾ Our findings of cooperation spillover suggest that Asia, which is a hot spot for various environmental issues, has many opportunities to promote cooperation in high politics.

Third, as our finding of an asymmetric response in Japan and Korea indicates, the same message of (non-)cooperation in low politics may generate different reactions from different audiences and, in turn, affect the attitude spillover dynamics. For the Japan-Korea rivalry, we attributed the different reactions to two factors that we believe are also present in many other contemporary international rivalries. The first factor is the power asymmetry in which a positive message of cooperation resonates more strongly among the public on the weaker side of the rivalry. The second factor is the different perceptions of the key obstacle to cooperation. When the public considers the rival's lack of willingness to cooperate as the major obstacle to cooperation, a positive signal of the rival's cooperative intent can be an effective trigger for cooperation spillover. This message, however, is less effective when the public thinks the obstacle to cooperation lies in the rival's inconsistency. In the latter case, a negative message of non-cooperation is particularly detrimental because it aggravates the perceived commitment problem. We believe that our study suggests a potential avenue for future research in which this asymmetry can be systematically assessed with more pairs of rival countries.

Admittedly, this study also has several limitations. First, while we discussed two possible mechanisms for cooperation spillover (changes in beliefs and rational extrinsic reciprocity), we did not empirically differentiate them. A future study can explore which of these mechanisms drives cooperation spillover under which conditions. We speculated that extrinsic reciprocity would be the dominant mechanism in the short term, while changes in beliefs would be more gradual. Another important yet under-explored aspect of cooperation spillover is its temporal dynamics; that is, how long the overall cooperative attitudes triggered by soft issue cooperation last (see also Koukis, Kelman & Ganapati, 2016) and what causes them to last. We believe exploring these temporal dynamics is an interesting direction for future research. Lastly, we could not fully account for the asym-

¹⁹⁾World Meteorological Organization (26 October 2021),<https://public.wmo.int/en/media/press-release/weather-and-climate-extremes-asia-killed-thousands-displaced-millions-and-cost>

metric findings between our two countries. Based on our tentative explanations, future research can be designed to more systematically investigate these asymmetric responses.

Data replication: The dataset, codebook, and R code for the empirical analysis in this article can be found at <http://www.prio.org/jpr/datasets>

Acknowledgments: We thank Dae Seok Choi, Hyunjin Choi, Alec Chung, Andreas Duit, Intaek Han, Airo Hino, Youngwan Kim, Chungshik Moon, Hyo Won Lee, Haeyong Lim, Cuz Potter, Ki Eun Ryu, Motoshi Suzuki, Seiki Tanaka, as well as two anonymous reviewers and the editors of the Journal of Peace Research for their valuable comments. The human subject protocol of the research was evaluated and approved by the Institutional Review Board at Doshisha University (Approval ID: 20046), and the research was conducted following approval. You can access the pre-registration at <https://osf.io/xaw54>

Funding: This work was supported by the Japan Society for the Promotion of Science (#18KT0055 and #19K13603).

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