Fear and Favoritism in the Age of COVID-19

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Abstract

Does fear cause us to “circle the wagons" and favor those in our ingroup? Or does fear of the “other” cause us to recognize our common humanity and become more charitable to those we might otherwise consider outsiders? The measurement of this effect is confounded by the fact that some groups respond more strongly to fear than others. We run an online experiment in South Korea where we induce fear via an autobiographical emotional memory treatment (AEMT) and examine the impact on donations to either an ingroup-related charity (the Korean Red Cross) or one that caters to an outgroup (the Korea Support Center for Foreign Workers). We find that while the observed level of fear is negatively correlated with donations to the outgroup, the induced fear caused by the experimental intervention is positively correlated with donations to the outgroup. We then consider how this effect varies by participant political views, and their time, risk, and social preferences.

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INTRODUCTION

> *"Fear is the path to the dark side. Fear Leads to Anger. Anger Leads to Hate. Hate leads to suffering." (Yoda, Phantom Menace 1999)*

The ongoing COVID-19 pandemic has naturally induced fear and anxiety in people around the globe, which seems to have had a profound impact on inter-group relations. For instance, as early in the pandemic as February 2020, a 16-year-old boy in San Fernando Valley in California was physically assaulted by bullies in his high school and was accused of carrying the new coronavirus simply due to his Asian American origin.[2] In April 2020, the racist graffiti "Stop eating dogs" was scrawled on the winter vestibule of a Michelin-starred Korean restaurant in New York City.[3] In fact, in a survey study conducted by the Pew Research Center in June 2020, 39% of Americans said that it had become more common for people to express racist or racially insensitive views about Asians since the onset of the pandemic; further, 31% of Asian Americans (and 21% of Black Americans) reported to have been subject to slurs or jokes because of their race or ethnicity during the period in question (Ruiz, Horowitz, and Tamir, 2020). This alarming rise in racial discrimination against Asians and other minorities in various countries around the world since the COVID-19 outbreak led Fernand de Varennes, the United Nations Special Rapporteur on minority issues, to warn that, "COVID-19 is not just a health issue; it can also be a virus that exacerbates xenophobia, hate and exclusion."[4] Of course, fear has important ramifications for inter-group relations well outside the context of COVID-19. For example, President Trump has repeatedly exploited people's fears and worries on many different levels (e.g., job security, public safety) to attack and scapegoat immigrants, portraying them (for the most part) as a threat to the United States and, in the process, spreading fear, resentment and hatred of them.[5]

The uncertainty and fear surrounding COVID-19 could have significant policy and political consequences. According to Human Rights Watch, certain political parties and groups in the United States, United Kingdom, Italy, Spain, Greece, France, and Germany have been exploiting the COVID-19 crisis to advance "anti-immigrant, white supremacist, ultra-nationalist,

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[2] See https://www.cbsnews.com/news/coronavirus-bullies-attack-asian-teen-los-angeles-accusing-him-of-having-coronavirus.

[3] See https://ny.eater.com/2020/4/13/21218921/jeju-noodle-bar-racist-graffiti-harrasment-coronavirus-nyc.

[4] See https://news.un.org/en/story/2020/03/1060602.

[5] See https://www.washingtonpost.com/outlook/trump-has-spread-more-hatred-of-immigrants-than-any-american-in-history/2019/11/07/7e253236-ff54-11e9-8bab-0fc209e065a8_story.html.

anti-Semitic, and xenophobic conspiracy theories that demonize refugees, foreigners, prominent individuals, and political leaders."[6] Along similar lines, the UN Special Rapporteur Fernand de Varennes stated that politicians and groups have been taking advantage of the fear surrounding the disease to scapegoat particular communities, raising violence against them.[7] The use of fear in politics is, of course, neither new nor limited to the case of COVID-19. In Europe, for instance, both sides of the political divide have embraced fear as their instrument in order to gain political support (Furedi 2018). As Furedi argues, "Condemnations of the use of fear by populist parties are swiftly followed by warnings about the threat they pose to democratic societies." The instrumental use of fear by politicians is driven by the simple fact that it seems to be a powerful motivator in elections.[8] As Tannenbaum et al. (2015) demonstrate in their comprehensive meta-analysis study, messages with fear are nearly twice as effective as messages without fear. Moreover, there are no identified circumstances in their study under which fear appeals backfire and produce undesirable outcomes. Lastly, it should be stressed here that the media play a pivotal part in strengthening the role of fear in politics. In a recent paper, Sacerdote et al. (2020) examine the tone of news articles regarding COVID-19 since January 1, 2020. They find that 91% of stories by the major media in the United States are negative in tone and this negativity does not respond to changes in trends with respect to new COVID-19 cases. Even during periods of decline in new cases, stories of increasing COVID-19 cases outnumber stories of decreasing cases by a factor of 5.5.

We are mostly interested in how emotional triggers such as fear can influence the level of other-regardingness in general as well as other-regardingness towards different identity groups. Social psychologists have for long studied how evoking emotions influence attention, attitudes, and behavior (Eagly and Chaiken 1993). Casey (2015) and Aaroe et al. (2017) find that an emotion like disgust can sharpen attention to a policy issue and heighten prejudice toward outgroups. Similarly, Loewenstein (2000) lays out an economic framework for how emotions can drive economic decision making (our focus), or be measured as a consequence of economic decision making (e.g., Joffiel et al. 2014).

We are primarily interested in fear and favoritism, defined as social preferences that lead to preferential treatment for one's ingroup versus biased behavior toward one's outgroup. We consider three mechanisms in particular: Fear increases favoritism as a way to protect those closest, or fear decreases favoritism because of a common enemy effect, or personality types that are fearful are also outgroup biased.

Mortality salience leads to an increase in ingroup identification as well as ingroup favoritism in prosocial behavior (Hohman and Hogg in press; Renkema et al. 2008; Jonas et al, 2002; Li et al. 2015). Brader et al. (2008) find that anti-immigrant anxiety induced by the media causes white Americans to become more opposed to immigration. Cohen et al. (2004) and Cohen et al.

[6] See https://www.hrw.org/news/2020/05/12/covid-19-fueling-anti-asian-racism-and-xenophobia-worldwide.
[7] See https://news.un.org/en/story/2020/03/1060602.
[8] See https://www.apa.org/news/apa/2020/10/fear-motivator-elections.

(2017) show that when one's own mortality is made salient, people tend to support more right-wing political candidates. Their body of research fits within the body of literature known as terror management theory (Greenberg et al. 2015), which posits that fear of death triggers a move toward self-preservation and a preservation of cultural values.

Several papers have specifically examined disease vulnerability and outgroup bias (Adida et al. 2018; Faulkner et al. 2004; Navarrete and Fessler 2006; Schaller and Neuberg 2012; Dutta and Rao 2015). Adida et al. (2018) find that while explicit association of a deadly disease with a cultural outgroup does not exacerbate individuals' response toward immigration, politicization and the activation of party identification do.

On the other hand, the fear of an external threat - a common enemy - such as COVID-19 could lead the previous ingroup and outgroup to come together (Heider 1946; Simmel 2010; Coser 1998). This could be because in the face of the threat groups may realize they have more in common than they previously thought (Gaertner et al. 1993). Fighting for a common goal - containing and fighting off COVID-19 - may become the superordinate goal that binds the groups (Sherif 1958). Jaegher (2020) has a recent survey of economic models of the "common enemy effect," but experimental evidence within economics has been limited.

Thus far, we have presented two competing hypotheses on the relationship between fear and favoritism. One explanation for the opposing findings confounding past studies is a possible selection. Recent findings suggest that conservatism is correlated with death anxiety, dogmatism-intolerance of ambiguity, uncertainty tolerance, and fear of threat and loss (Jost et al. 2003; Oxley et al. 2008; Vigil 2010; Kanai et al. 2011). At the same time, conservatives are found to endorse and use ingroup/loyalty moral domain more than liberals (Graham et al. 2009; Enke 2020) and vote accordingly (Enke 2020). As a consequence, conservatives may react more strongly to fear stimuli than non-conservatives and as a result observational cross-sectional studies are likely to find fear and ingroup favoritism to be correlated.

To summarize, there are three mechanisms that we consider to explain the relationship between fear and ingroup favoritism.

1. Fear increases favoritism because of a "circle the wagons" effect.
2. Fear of an external threat (the "common enemy" or the "other") decreases favoritism because it makes differences between groups feel less salient.
3. Fear is correlated with favoritism because groups that tend to favor loyalty also tend to exhibit increased anxiety and intolerance of uncertainty.

What has been relatively rare in the past literature is experimental evidence grounded in real world fear. Many of the past studies are lab experiments often devoid of context, others are observational studies that do not account for causality. Finally, they largely have not contended with the problem of selection. We provide, in the language of Levitt and List (2009), a framed online field experiment where we induce fear in the context of the COVID-19 pandemic accounting for the problem of selection.

To test our expectations, we conduct a pre-registered online survey experiment using a representative sample of South Korean adults with over 6,000 respondents.[9] In order to experimentally manipulate emotions, we employ the autobiographical emotional memory task (AEMT) widely used in experimental social sciences in which the respondents were asked to share their recent experience of feeling fear or happiness in writing (Callen et al. 2014; Zeitzoff 2014; Myers and Tingley 2016; Zeitzoff 2018; Young 2019; Kupatadze and Zeitzoff forthcoming; Mills and D'Mello 2014). Following the administration of treatment, we measured the respondents' group preferences based on their intent to donate either to ingroup or outgroup charities if they were selected as one of the ten randomly chosen respondents to receive 10,000 KRW (approximately 9 USD) at the end of the survey. In addition to the results of this variation of the dictatorship game, we also incorporate a behavioral measure of group preference for which we measured whether respondents chose to click on a link to seek information on a donation to support the education and learning for children in multiethnic families. Finally, we also ask a number of questions to capture various self-reported responses for group preferences replicating some of the standard questions in well-established long-running surveys, such as questions asking the respondent's self-reported preference for increasing or decreasing the number of people from different migrant groups from the General Social Survey and willingness to have different types of outgroup members as their neighbors from the World ValuesSurvey. We also measure political ideology, media trust and news consumption by replicating the standard battery of questions from the Pew Research Center (2020) so that we explore further heterogeneous treatment effects across different groups.

To gain deeper insights into the mechanisms at work, we also survey participants using the questions from the Global Preference Survey (Falk et al. 2018) in order to measure their level of positive and negative reciprocity, altruism, trust in others, patience, and risk aversion. This enables us both to explore the potential heterogeneity of the fear effect and to test a number of mediation hypotheses regarding fear. For example, Nyuyen and Noussair (2014) find that fear is associated with increased risk aversion.

We find that our fear inducement increases prosocial behavior toward the outgroup. This was reflected both in terms of donations and the seeking of fundraising information, but also in terms of political views regarding immigration and social views about who people want to see in their neighborhood. However, we find that people's baseline reported level of fear is negatively correlated with donations to the outgroup (as well as political and social views). Selection in observational studies is important. People who tend to be fearful tend to also inherently have higher ingroup favoritism. But when we are induced to think about fear, we all become more prosocial. The effect is driven by how we treat outgroups as there was little movement in how we treat ingroups. We present some suggestive evidence that this is due to the kind of media people are exposed to as well as an increase in altruism and trust.

[9] Han et al. (2020). "Fear and Favoritism in the Time of COVID-19." AEA RCT Registry. October 08. https://doi.org/10.1257/rct.6571-1.0.

CONTEXT, DATA AND EMPIRICAL DESIGN

Context: South Korea

We believe that Korea provides an important test case for our expectations on how fear could lead to exclusionary attitudes due to the prominence of the COVID-19 outbreak in the public sphere, the level and content of political rhetoric surrounding the outbreak in question, and other unique case characteristics.

In South Korea, as of December 21, 2020, there have been a total of 49,665 confirmed COVID-19 cases – among which 674 deceased. The first surge of confirmed cases was in February and March, triggered by gatherings of a religious cult in Daegu followed by a stream of infection originating from a gay club in Itaewon, a popular residential and commercial area among foreigners. The second surge was in August and September led by anti-government rallies organized by churches and summer vacationers. The third surge from mid-November to the time of the writing is the biggest spike since the beginning of the pandemic and is said to have started due to seasonal reasons and growing fatigue of the citizens on social distancing (Shin 2020).

In the last of the three survey waves of the biggest province in South Korea conducted in October 2020, when asked about fears regarding COVID-19, while 71.2% of the 2,548 respondents feared getting infected, 66% was worried about the social stigma that would follow and 50.4% feared belonging to a stigmatized group (Gyeonggi Public Health Policy Institute 2020). 30.1% of the respondents answered that they have come across hate speech regarding COVID-19 in the past week. The targets of the hate speech were those that did not practice social distancing (60.2%), christians (57.4%), quarantine violators (51.0%), Shinchunji (religious cult) (38.5%), and the current government and/or the president (32.5%). Though 73.6% of the respondents answered that the hate speech and expression does not help with the prevention of the spread of COVID-19, 45.6% sympathized with the sentiment.

From the very beginning, much attention has been paid to the origins and the source of spread of the disease. The search trends for COVID-19 related keywords in Naver – the most widely used web search engine in Korea - illustrates a spike in searches of “Wuhan pneumonia” (see Figure 1).

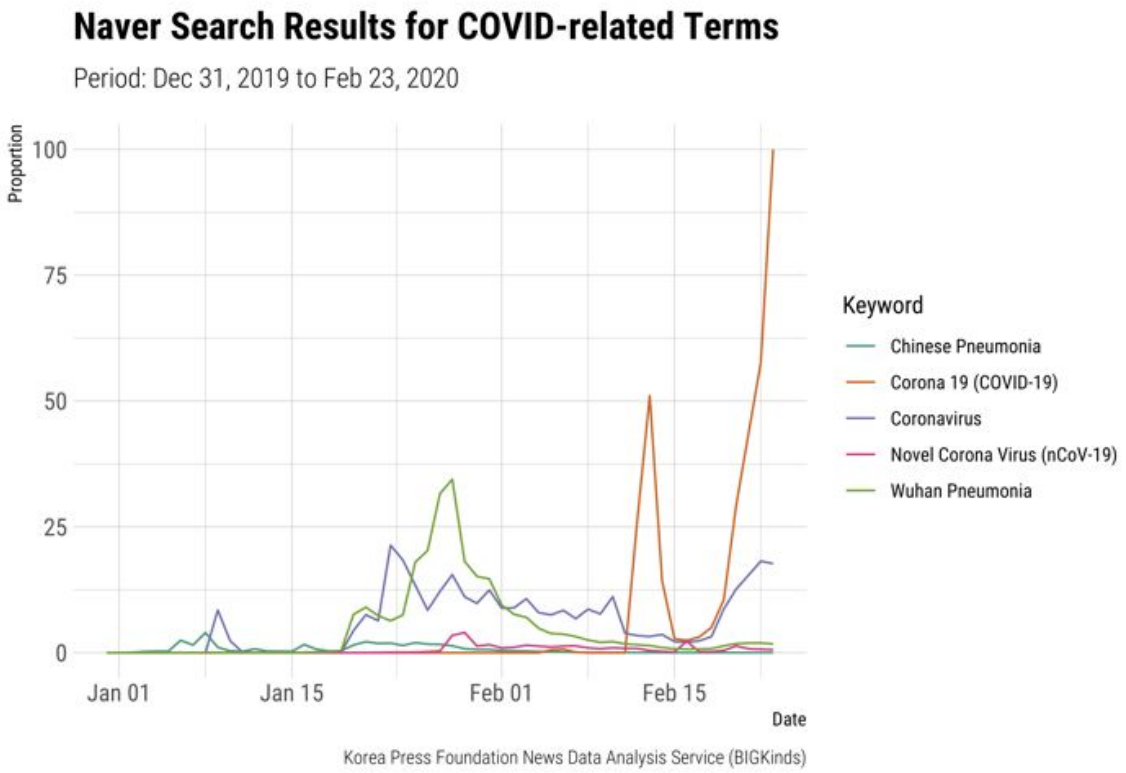

Figure 1: Naver Search Results for COVID-related Terms

COVID-19 and its origins in Wuhan, China, seem to have exacerbated the already heightened prejudice and hostility towards the Chinese as well as the Korean Chinese residing in South Korea. In 2020, out of more than 2.5 million foreigners residing in South Korea, 43.6% of them were of Chinese nationality and approximately 63.3% of them were Korean Chinese (Lee 2020). Sharing a border, the relationship between Korea and China has always been somewhat strenuous. Especially after the Korean war and the siding of China with North Korea since then, the strong economic ties China and South Korea managed to forge since 1992 with the establishment of diplomatic relations have often been tested with geopolitical tension. There has been increasing hostility towards the Chinese among Koreans since the early 2000s (Pew Research Center 2020). COVID-19 seems to have taken the hatred to new heights - during February 2-4, 2020, a nationally representative sample of 1,000 individuals were asked whether one has come across hate speech in the past week regarding COVID-19 and 60.4% of respondents answered that they have and that the target of the hate speech was the Chinese (82.05%), the infected (8.89%), specific media (2.52%), a specific politician or party (2.52%), the president or senior government officials (1.168%), and the Korean Chinese (1.17%) (You 2020).

On the other hand, since the establishment of diplomatic relations, many Korean Chinese - ethnic Koreans with Chinese Nationality, or “Joseonjok” - moved to South Korea for work (Jiang 2013: 93). In 2007, the Korean government established a “visit-work visa” (H2) targeting ethnic

Koreans living in China as well as the CIS which allows them to stay for 4 years. Koreans "feel closer" towards the Korean Chinese than the Chinese but not as close as they feel towards the Americans, Europeans, and North Korean defectors (Chung et al. 2010). According to a 2015 survey of 248 Koreans in their 20s to 30s, 59% of the respondents said that they perceived the word "Joseonjok" as people one has to be vigilant against (36%), those who are poor (16%), and those who lack public morals (7%) (Newsis 2015).

Media reports flooded on the discrimination that the Chinese and the Korean Chinese faced after the first few weeks of the COVID-19 outbreak (Bae et al. 2020). Half a million people signed an online petition to the President for a ban on visitors from China when there were only four cases of the virus in South Korea (Shin and Cha 2020). A member of the congress of the opposition party Jae-chul Shim even called for a travel ban for and deportation of any and all Chinese nationals. While the WHO announced the official name of the disease as "COVID-19" on February 11, 2020, the leading Newspaper agency in terms of market share, Chosun Ilbo (24.3% of printed newspaper subscription), made a point in using the term "Wuhan pneumonia" and "Wuhan Corona" till much later on in the year.

Using this distinctive context, we expect to be able to differentiate the effects of ingroup-outgroup dynamics often attributed as the main cause of exclusionary attitudes, such as xenophobia and racism. The dominant cultural theory of exclusion highlights the prominence of ingroup-outgroup differences, such as skin color, manner of dress, and language, as the main driver of exclusionary attitudes and such expectations have been extensively tested in many advanced democracy settings such as the United States or Europe (e.g., Sniderman et al. 2004). Yet the alleged group differences are often highly salient and intertwined in these contexts. In contrast, the similarities and differences across Koreans, Korean Chinese, and Chinese provide a unique opportunity to control for many of these cultural differences in a more nuanced manner to help refine our theories.

Data

The subjects consist of 6,472[10] adults 19 years old or older drawn from a master sample maintained by a survey firm, Hankook Research, located in Seoul, South Korea. The master sample consists of 535,086 people (as of June 2020) and is representative of the South Korean population with respect to location, sex, age, occupation, educational attainment, and income distribution. Although the master sample is designed to be representative of the South Korean population, the sample could differ from the general population especially in regards to their

[10] Our sample size was based on our power calculation based on results from Kritikos and Tan (IZA 2014), who ran a similar style dictator game, to assume a donation rate of 20% and a standard deviation of 32%. We assume the usual alpha of .05 and a beta of .80. Our full sample size is 4000, and so our 2x3 design has 666 people in each subsample. This will allow us to detect a treatment size of 5% (e.g., from 20% to 25%) between our subsample treatment. Just comparing our fear (2000 subjects) versus happiness (2000 subjects) interventions allows us to detect a treatment effect of 2.8%.

access to the internet and related communication devices and technology as the survey was conducted online. Subjects were paid 2,000 KRW (1.82 USD) for completing the survey and 10% were randomly selected to receive an extra payment of 10,000 KRW (9.08 USD) that they could use to make a donation to one or both of two charities or keep for themselves.

In terms of the survey flow, after the informed consent, the subjects were first asked a battery of questions capturing their socio-economic background. This was followed by questions capturing the subject's risk and time preferences using the Global Preferences Survey Module developed by Falk et al. (2018). We then asked questions capturing other pre-treatment characteristics, such as political ideology, religion, and exposure to and knowledge of COVID-19 related news. The subjects then received the treatments and the questions capturing the post-treatment outcome variables as explained further in the next section.

Treatment

To experimentally manipulate emotions, we employ the autobiographical emotional memory task (AEMT) in which the respondents were asked to share their recent experience of feeling fear or happiness in writing. AEMT has been widely used in experimental approaches to causally understanding the effect of emotions ranging from the effects of fear on risk preference in post-conflict Afghanistan (Callen et al. 2014), the role of anger on negative reciprocity in the Israel-Palestine conflict (Zeitzoff 2014; Zeitzoff 2018) and the Georgia-Russia conflict (Kupatadze and Zeitzoff forthcoming), the impact of various emotions on trust (Myers and Tingley 2016), and the effect of fear on opposition party support in Zimbabwe (Young 2019). Recent validity check experiments of the AEMT show that the approach is especially effective when inducing emotions of fear in terms of inducing specific desired emotions while not inducing any other incidental emotions at different levels (Mills and D'Mello 2014).

The text of the experiment prompt, translated from the original Korean language, reads as follows:

> *Fear Treatment*
>
> *We are interested in understanding how and when people feel fear or anxiety in their everyday lives. Such feelings may be due to various reasons such as [losing your job, the uncertainty of the future, or yourself or your family getting sick]. If you have experienced such feelings of fear or anxiety in the past few months, please briefly describe them below:*
>
> *Open-ended text entry box: ____*
>
> *Happiness Treatment*

We are interested in understanding how and when people feel happiness or joy in their everyday lives. Such feelings may be due to various reasons such as [getting a raise, changes in family relations due to marriage or childbirth, or getting a new job]. If you have experienced such feelings of happiness or joy in the past few months, please briefly describe them below:

Open-ended text entry box: ____

The examples in the square brackets for each of the treatments were chosen based on the top three factors identified as the main cause of anxiety or fear in the Korean Happiness Index (Kim et al. 2017). The order of the examples was fully randomized within treatment assignment status in order to avoid any carryover effects.

Note that we are effectively considering the Happiness treatment as a control. One might have thought we should have a more neutral control. However, our concern was that in the context of the COVID-19 pandemic a state of fear would be the default, and thus even a neutral control where we asked subjects to recount memory would likely bring up a fearful one. We also considered Hope rather than Happiness as a more natural opposite to Fear, but the Happiness AEMT inducement is more well established, and therefore happiness was selected instead.

To provide context for the emotions treatment and to induce subjects to think about COVID-19, we provide them information of a media report about a specific ethnicity committing a quarantine violation:

The Centers for Disease Control and Prevention clearly stated that not only the confirmed person, but also those suspected of contact with the confirmed person should be quarantined (self, facility, hospital) for 14 days from the last contact. However, for example, one [Korean, Korean Chinese, Chinese] violated self-containment guidelines and deviated. Have you heard of this?

We use a 2 X 3 factorial design with the two AEMT interventions (fear and happiness) and the three ethnicities information in the media report (Korea, Korean Chinese, Chinese) with equal probability of random assignment for all cells.

Main Outcome Variables

For the key outcome, we are interested in capturing the respondents' ingroup-outgroup preference. One frequent criticism against survey experiments is that the outcomes of interest are measured using self-reported survey responses, which may amount to nothing more than a cheap talk. That is, outcome variables captured through survey responses do not entail any real world cost and thus cannot be considered as reliable representation of the subject's true preference. In order to mitigate such concerns and induce some real cost in expressing their group preferences, we consider two behavioral measures embedded in our survey. First, we told the respondents that ten randomly chosen respondents will be given 10,000 KRW as a token of appreciation for the time and participation with the possibility of either keeping or donating some or all of the winning amount. Specifically, the respondents were asked to divide

the 10,000 KRW across three different options (self, ingroup charity and outgroup charity) and were informed that their allocation decision will be kept anonymous and that the survey firm will take care of any donations in their names on their behalf if they are chosen for the lottery. The question text, translated from the original Korean language, reads as follows:

> *Our research team plans to award 10,000 KRW to ten randomly selected respondents who participated in our survey. You can either keep or donate the 10,000 KRW that you win to the following organizations.*
>
> *Some people make donations to non-profit organizations such as the Korea Support Center for Foreign Workers which helps foreigners who live and work in Korea but are not eligible for COVID-19 emergency relief funds. Others make donations to organizations such as the Korean Red Cross which provides general emergency relief activities.*
>
> *If you are chosen to receive the 10,000 KRW, how would you like to use it?*
>
> *A) Keep to myself: ___ out of 10,000 KRW*
> *B) Donate to Korea Support Center for Foreign Workers: ___ out of 10,000 KRW*
> *C) Donate to Korean Red Cross: ___ out of 10,000 KRW*

Second, we also include another behavioral outcome measure towards the end of the survey for which the respondents we presented with the option of clicking on a hyperlink to a fundraiser organized by a prominent non-profit organization established to support the education and learning of children in multiethnic households. As of the year 2019, the proportion of school-aged children in multiethnic households in Korea reached 2.5%, which has shown a small but steady increase from 0.7% in 2012 when the statistic was first released (Ministry of Gender Equality and Family 2020). We capture whether the respondents click the hyperlink to be redirected to the fundraiser campaign web page and consider this as another costly behavioral measure capturing the respondents' outgroup preference. The question text, translated from the original Korean language, reads as follows:

> *Currently there is a fundraiser organized to support the education and learning for children in multiethnic households who are suffering from the COVID-19 pandemic. Are you willing to make a donation for such a fundraiser at this time?*
>
> *A) Yes*
> *B) No*

The basic summary statistics for these key behavioral outcome measures are presented in Table 1 below.

Variable	N	Mean	Std. Dev.
Keep to Self	6472	6.309	4.2
Ingroup Donation	6472	2.227	3.38
Outgroup Donation	6472	1.427	2.832
Total Donation	6472	3.654	4.188
Clicked	5849	0.487	0.5

Table 1: Summary Statistics for the Main Outcome Variables

While these behavioral measures are arguably more reliable than self-reported measures, they may be somewhat obtuse and fail to capture the channels through which the treatment is manifesting its effects. We thus also asked a battery of self-reported survey questions capturing group preferences by replicating existing questions from well-established surveys. First, from the Korean General Social Survey (KGSS), we ask the question, "[D]o you want the number of the following people to increase or decrease in Korea?" using a 5-point Likert scale for groups such as North Koreans defectors, low-skilled foreign workers, high-skilled foreign workers, Korean-Chinese, foreign students, or foreign investors. Second, from the World Values Survey (WVS), we replicate and ask, "[O]n this list are various groups of people. Could you please mention any that you would not like to have as neighbors?" with a yes or no binary response for groups such as disabled people, sexual minorities, immigrants/foreign workers, North Korean defectors, religious cult group members, refugees, and people with a criminal record. Third, we also use questions on trust, and positive and negative reciprocity from the Global Preferences Survey Module (Falk et al. 2018).

Finally, we also asked a number of questions capturing pre-treatment covariates including socioeconomic status, political views, patience and risk preference as well as media usage. Table 2 shows the summary and the balance check of the main pre-treatment covariates broken down by the treatment status. Overall, we do not see any statistically significant differences across the groups that we induced with fear and happiness.[11]

[11] The differences across all variables are insignificant when turning the categorical variables into indicator variables and taking the numerical mean, as well as when subjecting the resulting p-values for Bonferroni, Holm, and Benjamini-Hochberg adjustments.

	Fear Treatment			Happiness Treatment			
	N	Mean	Std.Dev.	N	Mean	Std.Dev.	Diff
Panel A : Demographic Characteristics							
Age	3239	46.97	15.01	3233	46.62	14.99	0.354
Sex	3239	0.51	0.50	3233	0.50	0.50	0.002
Panel B : Education							
Up to middle school	63	1.95		58	1.79		4.75
High school(Graduated)	1622	50.08		1591	49.21		(0.45)
College(Enrolled)	217	6.70		193	5.97		
College(Graduated)	1105	34.12		1127	34.86		
Graduate school(Enrolled)	24	0.74		33	1.02		
Graduate school(Graduated)	208	6.42		231	7.15		
Panel C : Religion							
Christianity	657	20.28		642	19.86		3.79
Buddhism	538	16.61		554	17.14		(0.44)
Catholicism	358	11.05		390	12.06		
No Religion	1652	51.00		1603	49.58		
Etc.	34	1.05		44	1.36		
Panel D : Political View							
Ideology	3111	3.00	0.92	3088	2.99	0.90	0.015
Ruling Party Support	3239	0.50	0.50	3233	0.49	0.50	0.004
Panel E : GPS Preferences							
GPS Patience	3239	-0.00	0.90	3233	0.00	0.90	-0.009
GPS Risk Taking	3239	-0.00	0.89	3233	0.00	0.87	-0.004

Table 2. Summary and Balance Check

Estimation

We provide three main specifications of the effect of fear on donations. The outcome of interest y_i is either donations to the ingroup charity (the Korean Red-Cross), the outgroup charity (the *Korea Support Center for Foreign Workers*), total donations, and whether they sought further information on ways to support multiethnic households, both at the time of the initial experiment and then again one and four weeks later.

$\vec{X}$ is a vector of controls that includes Global Preference Survey parameters, demographic controls, political views, and media consumption

$$y_i = \beta \cdot Treatment_i + \vec{\gamma} \cdot \vec{X}_i + \varepsilon_i \quad (1)$$

$$y_i = \beta \cdot Fear_i + \vec{\gamma} \cdot \vec{X}_i + \varepsilon_i \quad (2)$$

Equation 1 estimates the causal effect of the fear treatment on the outcomes of interest. While Equation 2 estimates the association between reported fear and the outcomes of interest. To further investigate the connection between fear and our outcome variable, we consider a third specification where we present results of an IV estimate of the outcome on fear, where fear is indicated by the assigned treatment group.

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
Fear	6,472	2.326	0.913	1	2	3	4
Anger	6,472	2.232	0.986	1	1	3	4
Happiness	6,472	2.756	0.853	1	2	3	4
Sad	6,472	2.093	0.930	1	1	3	4
Disgust	6,472	1.760	0.898	1	1	2	4
Surprise	6,472	1.737	0.845	1	1	2	4

Table 3: Summary Statistics for Emotions

	(1) Fear	(2) Anger	(3) Happiness	(4) Sadness	(5) Hate	(6) Surprise
Fear Treatment	0.108***	0.014	-0.016	0.042*	0.015	0.036*
	(0.023)	(0.025)	(0.021)	(0.023)	(0.022)	(0.021)
Observations	6,472	6,472	6,472	6,472	6,472	6,472
R^2	0.004	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Manipulation Check

Table 3 presents the summary statistics for the variables capturing the six basic emotions and Table 4 presents the manipulation check using these variables. We see that manipulation worked well and increased reported fear by 0.108 on the 5-point Likert scale. Treatment moves fear but also sadness and surprise by a bit as expected (Mills and D'Mello 2014). We use the effect of our AEMT treatment on reported fear as a first stage for IV.

Results

Table 5 presents the results of our main specification. Each column presents the same set of specifications, where Column 1 has no controls, and each additional column adds Global Preference Survey measures of time, risk, positive and negative reciprocity, altruism, trust, demographic controls, political ideology controls, and media consumption controls.

The first thing we observe across Panels A, B, and C is the effect of our Fear Treatment. Notably, the fear treatment has no effect on donations to the ingroup charity but significantly increases donations to the outgroup charity by 0.12 to 0.14 (in thousand KRWs) or roughly a 9% increase. The other thing to note is that the effect is concentrated in outgroup giving. There was no increase in ingroup giving and the increase in total donations overall was not significant. Taken together, this suggests that the “common enemy effect” dominates and that the impact is seen primarily in outgroup donations.

The second thing we observe from Panel B of Table 5 is that Reported Fear is negatively associated with donations to the outgroup. A one point increase in the Likert scale for fear is associated with a 0.08 to 0.12 KRW decrease in outgroup donations, a decrease of 6-9%. The 0.12 decrease comes from Column 1 where there are no controls. Adding in the GPS parameter (risk, time, and social preference) controls in Column 2 brings that effect down to 0.08. All additional controls (demographic, political, media consumption) have no appreciable effect on the estimated effect of fear suggesting that those economic parameters fully capture any additional relationship between fear and outgroup social preferences. We will return to these parameter estimates in the Discussion. As with the case of Treated Fear, the effect was mainly seen in donations to the outgroup charity.

The third thing to observe is the IV estimate, where we used the treatment as an instrument for Reported Fear. A 1-point increase in the 5-point Likert scale for fear increased donations to the outgroup by 1.1 to 1.3 thousand KRW, or a 79-92% increase.

	(1)	(2)	(3)	(4)	(5)
Panel A: Ingroup Donation					
Fear Treatment	0.001	-0.041	-0.049	-0.064	-0.064
	(0.084)	(0.081)	(0.081)	(0.083)	(0.083)
R^2	0.000	0.062	0.085	0.085	0.088
Reported Fear	-0.106**	-0.052	-0.032	-0.039	-0.044
	(0.046)	(0.045)	(0.045)	(0.046)	(0.046)
R^2	0.001	0.062	0.085	0.085	0.088
IV Estimate	0.010	-0.373	-0.440	-0.562	-0.574
	(0.775)	(0.744)	(0.725)	(0.735)	(0.757)
Panel B: Outgroup Donation					
Fear Treatment	0.144**	0.122*	0.139**	0.138*	0.134*
	(0.070)	(0.069)	(0.068)	(0.070)	(0.070)
R^2	0.001	0.042	0.068	0.073	0.075
Reported Fear	-0.117***	-0.079**	-0.074**	-0.079**	-0.080**
	(0.039)	(0.038)	(0.038)	(0.039)	(0.039)
R^2	0.001	0.042	0.068	0.073	0.075
IV Estimate	1.332*	1.113*	1.242*	1.208*	1.211*
	(0.716)	(0.674)	(0.664)	(0.667)	(0.687)
Panel C: Total Donation					
Fear Treatment	0.146	0.081	0.090	0.074	0.070
	(0.104)	(0.098)	(0.097)	(0.099)	(0.099)
R^2	0.000	0.111	0.147	0.146	0.148
Reported Fear	-0.223***	-0.131**	-0.106**	-0.118**	-0.124**
	(0.057)	(0.054)	(0.053)	(0.055)	(0.055)
R^2	0.002	0.111	0.148	0.147	0.149
IV Estimate	1.342	0.740	0.802	0.646	0.637
	(1.013)	(0.912)	(0.881)	(0.881)	(0.907)
Obs.	6,472	6,472	6,472	6,199	6,199
GPS pref. Control	N	Y	Y	Y	Y
Demo. Control	N	N	Y	Y	Y
Poli. Control	N	N	N	Y	Y
Media Control	N	N	N	N	Y

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5: Effects of Treatment on Donations

	(1)	(2)	(3)	(4)	(5)
Outcome Var : Seek Fundraiser Information					
Fear Treatment	0.051***	0.044***	0.046***	0.047***	0.047***
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
R^2	0.003	0.046	0.055	0.059	0.064
Reported Fear	-0.013	-0.006	-0.003	-0.002	-0.004
	(0.008)	(0.008)	(0.008)	(0.009)	(0.009)
R^2	0.001	0.044	0.053	0.057	0.062
IV Estimate	0.553**	0.470**	0.486**	0.475**	0.491**
	(0.243)	(0.217)	(0.217)	(0.209)	(0.217)
Obs.	4,188	4,188	4,188	4,003	4,003
GPS pref. Control	N	Y	Y	Y	Y
Demo. Control	N	N	Y	Y	Y
Poli. Control	N	N	N	Y	Y
Media Control	N	N	N	N	Y

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6: Effects of Treatment on Hyperlink Click

Table 6 presents the same estimates for the Fear Treatment, for Reported Fear, and IV for whether the subject sought additional information for a fundraiser to support multiethnic families during COVID-19. Here we find no relationship with Reported Fear, but the treatment induced a 5% increase in the probability of seeking information (about a 10% increase). (The drop in the number of observations was due to a technical difficulty where a random set did not receive the fundraiser question. This did not affect any of the other questions in the experiment.)

Table 7 presents our main results interacted with political ideology. Interestingly enough, while a conservative political ideology does indeed predict lower donations to the outgroup, the interaction term between political ideology and fear is not significantly different from zero. This could be because reported fear is already highly correlated with political ideology[12] or it could be because the relationship between fear and outgroup bias depends more on how the outgroup is framed in the media we consume than in our underlying ideology per se.

[12] The results from a simple Chi-squares test given that both reported fear and ideology are technically discrete variables (Chi-squares: 20.98 p-value: 0.05) indicate that there is a significant relationship between the two variables.

	(1) Ingroup Donation	(2) Ingroup Donation	(3) Outgroup Donation	(4) Outgroup Donation	(5) Total Donation	(6) Total Donation	(7) Seek Info	(8) Seek Info
Panel A: Political Var. × Fear Treatment								
Ideology	0.046	0.075	0.027	0.045	0.073	0.120	-0.014	-0.012
× Fear Treatment	(0.095)	(0.092)	(0.080)	(0.077)	(0.117)	(0.109)	(0.017)	(0.017)
Ideology	0.115*	0.064	-0.237***	-0.222***	-0.123	-0.158*	-0.028**	-0.016
	(0.068)	(0.069)	(0.057)	(0.058)	(0.084)	(0.082)	(0.012)	(0.013)
Fear Treatment	-0.150	-0.287	0.055	-0.002	-0.095	-0.290	0.093*	0.082
	(0.297)	(0.286)	(0.249)	(0.242)	(0.367)	(0.342)	(0.054)	(0.053)
Ruling Party Support	0.059	0.018	-0.025	-0.047	0.035	-0.029	0.011	-0.014
× Fear Treatment	(0.168)	(0.166)	(0.141)	(0.141)	(0.208)	(0.198)	(0.031)	(0.031)
Ruling Party Support	-0.251**	-0.093	0.310***	0.219**	0.059	0.126	0.067***	0.065***
	(0.119)	(0.124)	(0.099)	(0.105)	(0.147)	(0.148)	(0.022)	(0.023)
Fear Treatment	-0.027	-0.073	0.156	0.158	0.128	0.085	0.046**	0.054**
	(0.118)	(0.117)	(0.099)	(0.099)	(0.147)	(0.140)	(0.022)	(0.022)
Panel B: Political Var. × Reported Fear								
Ideology	0.020	0.046	0.016	0.030	0.036	0.076	0.005	0.009
× Reported Reported Fear	(0.051)	(0.049)	(0.043)	(0.042)	(0.063)	(0.059)	(0.009)	(0.009)
Ideology	0.092	-0.004	-0.260**	-0.267**	-0.167	-0.272*	-0.047**	-0.043*
	(0.128)	(0.125)	(0.107)	(0.106)	(0.158)	(0.150)	(0.023)	(0.023)
Reported Fear	-0.169	-0.182	-0.170	-0.171	-0.339*	-0.353*	-0.026	-0.031
	(0.161)	(0.155)	(0.135)	(0.131)	(0.198)	(0.185)	(0.029)	(0.029)
Ruling Party Support	-0.071	-0.121	-0.004	-0.013	-0.075	-0.135	0.015	0.013
× Reported Reported Fear	(0.092)	(0.091)	(0.077)	(0.077)	(0.114)	(0.109)	(0.017)	(0.017)
Ruling Party Support	-0.055	0.199	0.308	0.228	0.252	0.426	0.037	0.028
	(0.230)	(0.232)	(0.192)	(0.197)	(0.285)	(0.277)	(0.042)	(0.043)
Reported Fear	-0.071	0.015	-0.116**	-0.073	-0.187**	-0.058	-0.020*	-0.010
	(0.064)	(0.064)	(0.054)	(0.054)	(0.079)	(0.077)	(0.012)	(0.012)
Obs.	6,472	6,199	6,472	6,199	6,472	6,199	4,188	4,003
Control	No	Full	No	Full	No	Full	No	Full

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7: Interactions with Political Variables

Table 8 considers the interaction of media consumption on our main outcome variables. As with the political variables, media consumption interacted with the fear treatment had no significant effect. However, we do see a significant interaction between media consumption and Reported Fear. In particular, those who consume more conservative news sources contributed less to the outgroup (foreign workers) non-profit when they reported more fear. This was also true for those who consumed a greater diversity of social media, suggesting the effect is related to exposure to media messages for migrants that are associated with fear.

	(1) Ingroup Donation	(2) Ingroup Donation	(3) Outgroup Donation	(4) Outgroup Donation	(5) Total Donation	(6) Total Donation	(7) Seek Info	(8) Seek Info
Panel A: Media × Fear Treatmentment								
News Consumption	0.004	-0.007	0.001	0.011	0.006	0.004	-0.009	-0.013
× Fear Treatmentment	(0.118)	(0.118)	(0.099)	(0.100)	(0.146)	(0.141)	(0.022)	(0.022)
News Consumption	0.285***	0.011	0.166**	-0.101	0.450***	-0.090	0.071***	0.027*
	(0.084)	(0.090)	(0.070)	(0.076)	(0.104)	(0.107)	(0.015)	(0.017)
Fear Treatment	-0.015	-0.042	0.138	0.101	0.123	0.059	0.076	0.085
	(0.356)	(0.359)	(0.299)	(0.304)	(0.441)	(0.429)	(0.065)	(0.066)
Media Diversity	0.004	0.008	-0.019	-0.016	-0.015	-0.008	0.001	0.002
× Fear Treatmentment	(0.019)	(0.019)	(0.016)	(0.016)	(0.023)	(0.022)	(0.003)	(0.003)
Media Diversity	0.011	-0.006	0.016	0.014	0.027	0.008	0.005**	0.001
	(0.014)	(0.014)	(0.011)	(0.012)	(0.017)	(0.017)	(0.002)	(0.003)
Fear Treatment	-0.024	-0.112	0.252**	0.227*	0.228	0.116	0.046*	0.035
	(0.138)	(0.138)	(0.116)	(0.117)	(0.171)	(0.165)	(0.025)	(0.026)
SNS Diversity	-0.041	-0.011	-0.000	0.027	-0.042	0.016	0.003	0.006
× Fear Treatmentment	(0.046)	(0.045)	(0.038)	(0.038)	(0.056)	(0.054)	(0.008)	(0.008)
SNS Diversity	0.150***	0.094***	0.032	-0.021	0.182***	0.073*	0.019***	0.008
	(0.033)	(0.035)	(0.028)	(0.030)	(0.041)	(0.042)	(0.006)	(0.007)
Fear Treatment	0.078	-0.042	0.143	0.079	0.221	0.037	0.043*	0.034
	(0.125)	(0.124)	(0.105)	(0.105)	(0.155)	(0.148)	(0.023)	(0.023)
Conserv. Newspaper	0.192	0.141	-0.045	-0.095	0.147	0.045	0.047	0.044
× Fear Treatmentment	(0.192)	(0.189)	(0.161)	(0.160)	(0.238)	(0.225)	(0.035)	(0.035)
Conserv. Newspaper	-0.118	-0.282*	0.001	0.090	-0.117	-0.192	-0.015	-0.035
	(0.136)	(0.147)	(0.114)	(0.124)	(0.168)	(0.175)	(0.025)	(0.027)
Fear Treatment	-0.049	-0.102	0.156*	0.159*	0.108	0.057	0.038**	0.035*
	(0.098)	(0.097)	(0.082)	(0.082)	(0.121)	(0.116)	(0.018)	(0.018)
Conserv. TV	-0.015	0.062	-0.117	-0.102	-0.132	-0.040	-0.035	-0.026
× Fear Treatmentment	(0.183)	(0.180)	(0.153)	(0.152)	(0.226)	(0.215)	(0.034)	(0.034)
Conserv. TV	0.375***	-0.176	0.122	-0.092	0.498***	-0.267	0.038	0.011
	(0.129)	(0.144)	(0.109)	(0.122)	(0.160)	(0.172)	(0.024)	(0.027)
Fear Treatment	0.004	-0.083	0.180**	0.165*	0.183	0.082	0.061***	0.055***
	(0.101)	(0.100)	(0.084)	(0.084)	(0.125)	(0.119)	(0.018)	(0.018)
Panel B: Media × Reported Fear								
News Consumption	0.050	0.080	-0.095*	-0.083	-0.044	-0.003	-0.020*	-0.023**
× Reported Fear	(0.062)	(0.062)	(0.052)	(0.053)	(0.077)	(0.075)	(0.011)	(0.012)
News Consumption	0.169	-0.179	0.388***	0.100	0.557***	-0.079	0.115***	0.075**
	(0.157)	(0.161)	(0.131)	(0.136)	(0.194)	(0.192)	(0.029)	(0.030)
Reported Fear	-0.253	-0.280	0.160	0.166	-0.093	-0.114	0.047	0.063*
	(0.187)	(0.190)	(0.157)	(0.161)	(0.232)	(0.227)	(0.034)	(0.035)
Media Diversity	0.017*	0.020**	-0.006	-0.010	0.011	0.010	0.000	-0.001
× Reported Fear	(0.010)	(0.010)	(0.008)	(0.008)	(0.012)	(0.012)	(0.002)	(0.002)
Media Diversity	-0.027	-0.049*	0.022	0.029	-0.005	-0.019	0.004	0.004
	(0.025)	(0.025)	(0.021)	(0.022)	(0.031)	(0.030)	(0.004)	(0.005)
Reported Fear	-0.206***	-0.161**	-0.080	-0.021	-0.286***	-0.182**	-0.015	0.000
	(0.074)	(0.075)	(0.062)	(0.063)	(0.092)	(0.089)	(0.014)	(0.014)
SNS Diversity	-0.000	0.005	-0.038*	-0.038*	-0.039	-0.033	0.001	-0.001
× Reported Fear	(0.025)	(0.025)	(0.021)	(0.021)	(0.031)	(0.029)	(0.005)	(0.005)
SNS Diversity	0.131**	0.077	0.126**	0.085	0.257***	0.162**	0.018	0.013
	(0.063)	(0.064)	(0.053)	(0.054)	(0.078)	(0.076)	(0.012)	(0.012)
Reported Fear	-0.118*	-0.055	-0.045	-0.004	-0.163*	-0.059	-0.017	-0.002
	(0.067)	(0.067)	(0.056)	(0.057)	(0.083)	(0.080)	(0.013)	(0.013)
Conserv. Newspaper	0.170	0.217**	-0.201**	-0.215**	-0.031	0.003	-0.006	-0.011
× Reported Fear	(0.105)	(0.103)	(0.088)	(0.087)	(0.130)	(0.123)	(0.019)	(0.019)
Conserv. Newspaper	-0.419	-0.717***	0.440**	0.537**	0.021	-0.181	0.022	0.012
	(0.261)	(0.265)	(0.218)	(0.224)	(0.323)	(0.317)	(0.047)	(0.049)
Reported Fear	-0.150***	-0.103*	-0.065	-0.022	-0.215***	-0.125*	-0.011	-0.001
	(0.054)	(0.054)	(0.045)	(0.046)	(0.066)	(0.064)	(0.010)	(0.010)
Conserv. TV	0.081	0.126	-0.030	-0.041	0.051	0.085	0.006	0.003
× Reported Fear	(0.100)	(0.099)	(0.084)	(0.084)	(0.123)	(0.118)	(0.018)	(0.018)
Conserv. TV	0.179	-0.438*	0.134	-0.046	0.314	-0.485	0.006	-0.009
	(0.249)	(0.256)	(0.209)	(0.217)	(0.309)	(0.306)	(0.046)	(0.048)
Reported Fear	-0.131**	-0.083	-0.108**	-0.067	-0.239***	-0.150**	-0.014	-0.005
	(0.055)	(0.055)	(0.046)	(0.047)	(0.068)	(0.066)	(0.010)	(0.010)
Obs.	6,472	6,199	6,472	6,199	6,472	6,199	4,188	4,003
Control	No	Full	No	Full	No	Full	No	Full

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8: Interactions with Media Consumption

VARIABLES	(1) North Korea Defectors	(2) North Korea Defectors	(3) Foreign Production Workers	(4) Foreign Production Workers	(5) Foreign Professional Workers	(6) Foreign Professional Workers	(7) The Ethnic Koreans From China	(8) The Ethnic Koreans From China	(9) Foreign Students	(10) Foreign Students	(11) Foreign Businessmen and Investors	(12) Foreign Businessmen and Investors
Fear Treatment	-0.022	-0.014	-0.019	-0.019	-0.060**	-0.060**	-0.096***	-0.088***	0.010	0.004	0.009	0.011
	(0.029)	(0.029)	(0.026)	(0.026)	(0.027)	(0.027)	(0.026)	(0.025)	(0.026)	(0.026)	(0.027)	(0.026)
R^2	0.000	0.080	0.000	0.044	0.001	0.051	0.002	0.122	0.000	0.077	0.000	0.088
Reported Fear	0.113***	0.076***	0.078***	0.057***	0.063***	0.036**	0.084***	0.054***	0.104***	0.079***	0.074***	0.043***
	(0.016)	(0.016)	(0.014)	(0.015)	(0.015)	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)	(0.015)	(0.015)
R^2	0.008	0.084	0.005	0.046	0.003	0.051	0.005	0.123	0.008	0.082	0.004	0.089
IV Fear	-0.190	-0.120	-0.166	-0.168	-0.543**	-0.547**	-0.841***	-0.788***	0.096	0.032	0.084	0.099
	(0.260)	(0.251)	(0.232)	(0.234)	(0.271)	(0.270)	(0.298)	(0.286)	(0.241)	(0.239)	(0.240)	(0.239)
Obs.	5,796	5,609	6,117	5,901	6,137	5,919	6,158	5,920	6,159	5,936	6,210	5,986
Control	No	Full	No	Full	No	Full	No	Full	No	Full	No	Full

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9: Outcome Variables, "Do you want the following groups to decrease in Korea?"

VARIABLES	(1) Persons With Disabilities	(2) Persons With Disabilities	(3) Foreign Immigrants/ Workers	(4) Foreign Immigrants/ Workers	(5) Members Of A Cult	(6) Members Of A Cult	(7) Former Convicts	(8) Former Convicts	(9) Sexual Minorities	(10) Sexual Minorities	(11) North Korean Defectors	(12) North Korean Defectors	(13) Refugees	(14) Refugees
Fear Treatment	-0.001	-0.004	-0.021*	-0.022**	0.004	0.005	-0.018**	-0.016*	-0.007	-0.014	0.000	-0.001	-0.037***	-0.041***
	(0.006)	(0.006)	(0.011)	(0.011)	(0.009)	(0.009)	(0.009)	(0.009)	(0.012)	(0.012)	(0.011)	(0.011)	(0.012)	(0.012)
R^2	0.000	0.020	0.001	0.050	0.000	0.030	0.001	0.054	0.000	0.139	0.000	0.042	0.002	0.046
Reported Fear	0.001	-0.002	0.028***	0.017***	0.003	0.002	0.014***	0.008	-0.004	0.011*	0.031***	0.018***	0.024***	0.012*
	(0.003)	(0.003)	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)
R^2	0.000	0.020	0.003	0.051	0.000	0.030	0.001	0.054	0.000	0.139	0.004	0.043	0.002	0.045
IV Fear	-0.012	-0.036	-0.192*	-0.203*	0.037	0.044	-0.166*	-0.141	-0.068	-0.126	0.001	-0.009	-0.342**	-0.375***
	(0.055)	(0.055)	(0.110)	(0.108)	(0.083)	(0.083)	(0.089)	(0.086)	(0.115)	(0.111)	(0.099)	(0.098)	(0.133)	(0.133)
Obs.	6,472	6,199	6,472	6,199	6,472	6,199	6,472	6,199	6,472	6,199	6,472	6,199	6,472	6,199
Control	No	Full	No	Full	No	Full	No	Full	No	Full	No	Full	No	Full

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10: Outcome Variables, "Mention any that you would not like to have as neighbors?"

Finally, Tables 9 and 10 show the same three main specifications (the Fear Treatment, Reported Fear, and IV Fear) on other outcome variables. Specifically, we are interested in self-reported political attitudes regarding whether they wanted a lower number of various ethnic groups in their country or whether they would be opposed to having members of various marginalized groups as their neighbor. The results all go in the same direction as our donation effects. Exposure to our fear treatment caused people to be more welcoming to outsiders, while reported fear itself was correlated with a less welcoming attitude. Both tables help confirm that our fear effects do not apply only to the arguably artificial setting of donating experimental money but also to reported political and social attitudes.

Discussion

The results reported suggest that the short-term effect of induced fear has a larger common enemy effect that increases altruistic behavior toward the outgroup compared to the effect of

increasing identification with the ingroup. We find that the effect is primarily seen in terms of prosocial behavior to the outgroup, and can be seen not just in donations but also in political and social attitudes. However, our results are also consistent with observational studies that find that fear is positively correlated with anti-immigrant, anti-outgroup attitudes. This provides evidence for the selection hypothesis: those who hold more conservative values are both more fearful and more opposed to immigration and other outgroups.

Economic Channels

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
VARIABLES	Altruism	Altruism	Pos. Rec.	Pos. Rec.	Neg. Rec.	Neg. Rec.	Trust	Trust	Procra.	Procra.
Fear Treatment	0.039*	0.041*	0.014	0.005	0.004	-0.001	0.044*	0.047*	0.079	0.106*
	(0.022)	(0.021)	(0.021)	(0.021)	(0.021)	(0.020)	(0.025)	(0.025)	(0.064)	(0.062)
R^2	0.000	0.117	0.000	0.071	0.000	0.066	0.000	0.066	0.000	0.083
Reported Fear	-0.047***	-0.030**	-0.035***	-0.021*	-0.015	-0.004	-0.011	0.005	0.338***	0.317***
	(0.012)	(0.012)	(0.011)	(0.012)	(0.011)	(0.011)	(0.014)	(0.014)	(0.035)	(0.035)
R^2	0.002	0.117	0.001	0.072	0.000	0.066	0.000	0.065	0.015	0.095
IV Estimates	0.358*	0.373*	0.131	0.044	0.036	-0.010	0.402	0.431*	0.732	0.972*
	(0.217)	(0.209)	(0.197)	(0.190)	(0.190)	(0.185)	(0.245)	(0.242)	(0.587)	(0.581)
Obs.	6,472	6,199	6,472	6,199	6,472	6,199	6,472	6,199	6,472	6,199
Control	No	Full	No	Full	No	Full	No	Full	No	Full

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 11: Global Preference Survey Variables as Outcomes

	Altruism		Positive Reciprocity		Negative Reciprocity		Trust	
	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value
ACME	0.023*	0.062	0.0057	0.504	0.00016	0.926	0.0025	0.170
ADE	0.120*	0.074	0.1377**	0.046	0.14528**	0.042	0.1429**	0.042
Total Effect	0.143**	0.024	0.1435**	0.040	0.14544**	0.040	0.1454**	0.042
Prop. Mediated	0.163*	0.086	0.0364	0.500	0.00030	0.922	0.0142	0.204

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 12: Social Preferences as Mediators

The experiment was also designed to examine the economic channels through which fear operates to change prosociality toward outgroups. Table 11 measures the effect of the fear treatment on four social preferences (as measured by the Global Preferences Survey). We find that the Fear Treatment has a significantly positive effect on altruism and trust but not on reciprocity, suggesting altruism and trust as possible mechanisms for the observed charitable behavior. To further test this mechanism, we employ a nonparametric causal mediation model to estimate the average causal mediation effect (ACME) of our treatment on outgroup donation that is mediated by the social preferences (Imai et al. 2011; Tingley et al. 2014). The results, presented in Table 12 with uncertainty measures based on the quasi-Bayesian Monte Carlo method based on normal approximation, partially confirm our expectation that the ACME is

positive and statistically significant for altruism but not the other social preference variables. The total effect and average direct effect (ADE) are statistically significant across all model specifications.

Other Implications

As a way to get a sense of the impact of Fear on outgroup biases in the US, we take advantage of the data provided by the USC Understanding America Study (UAS) where question ei023 is whether subjects agree or disagree about the question “There are too many strangers in my neighborhood.” There is no direct measure of fear in the UAS study but there is a cluster of questions PHQ-4, standard health screening questions for anxiety and depression, that asks about anxiety, being worried, or being depressed. Finally we take advantage of the COVID related questions on the panel survey, where they ask about the number of friends hospitalized for COVID-19. In column 1, we see that the number of friends hospitalized is associated with an increase in anxiety and worry and depression. We see from column 2 that that the number of friends hospitalized also is associated with more agreement that there are too many strangers. Column 3 shows the direct effect of the PHQ-4 score on the belief that there are too many strangers, while Column 4 shows the same effect, where the PHQ-4 score is instrumented using the number of friends who were hospitalized. Finally, column 5 considers an alternative fixed effects specification with day and person fixed effects, and still finds a positive relationship between PHQ4 score and the belief that there are too many strangers. Taken together, we find a positive association between friends who were hospitalized with a wariness of strangers, and that the increase in anxiety is at least one channel for that aversion.

We also decomposed PHQ4 into its individual questions about anxiety and worry and got similar results. We also found similar results with other COVID questions but the number of friends hospitalized was perhaps the most plausibly exogenous to other attitudes about fear or strangers.

	(1) PHQ4	(2) ei023	(3) ei023	(4) ei023	(5) ei023
# of Friends Hospitalized	0.0173**	0.0121***			
	(0.00616)	(0.00173)			
PHQ4 Score (Anxiety, Worried, Depressed)			0.0498***	0.697**	0.00834***
			(0.00105)	(0.250)	(0.00123)
	OLS	OLS	OLS	IV	FE (ID, T)
N	60874	60807	67391	60756	67182

Standard errors in parentheses
="* p<0.05 ** p<0.01 *** p<0.001"

Table 13: Observed COVID Fear and outgroup Bias within the US

On the surface, these results suggest that increased fear induces distrust of outsiders. However, our experiment points to a different interpretation: perhaps the people who are most likely to be alarmed by COVID-19 are most likely to become distrustful of outsiders.

While we, of course, have to be cautious in interpreting the generalizability of our particular fear inducement, we hope it provides some evidence that the causal effect of fear is pro-social. While we began this discussion with anecdotes and news stories of how COVID-19 has pulled people apart and sowed division, there are also stories of people coming together, of New Yorkers clapping each evening as essential workers returned home from work, of record charitable donations made, of Korean pop groups and Spanish language songs topping US pop charts for the first time ever. In a year with much to be afraid of, there was also all the reason for people to come together, and our evidence suggests that maybe some of us did.

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