The pathogen paradox: Evidence that perceived COVID-19 threat is associated with both pro- and anti-immigrant attitudes

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Abstract

COVID-19 pandemic, as a global threat to humanity, is likely to instigate a variety of collective responses in the society. We examined, for the first time, whether COVID-19 threat perception is related to attitudes towards Syrian immigrants in Turkey, theorizing a dual pathway whereby threat caused by the COVID-19 pandemic would relate to both pro- and anti-immigrant feelings. While drawing upon behavioral immune system theory, we expected that pathogen threat would lead to more exclusionary attitudes; relying on the common ingroup identity model, we predicted that pathogen threat would promote inclusionary attitudes through creating a common ingroup in the face of a global threat. Results from two studies using online search volume data at the province-level ($N = 81$) and self-report measures at the individual level ($N = 294$) demonstrated that perceived COVID-19 threat was directly associated with more positive attitudes towards immigrants (Study 1 and 2). Study 2 further revealed indirect positive (through a sense of common identity) and negative (through perceptions of immigrant threat) links between COVID-19 threat perception and attitudes towards immigrants. These results highlight the importance of integrating evolutionary and social identity perspectives when assessing pathogen-related threats. We draw attention to managing the public perceptions of COVID-19 threat which may mitigate the social aftermath of the pandemic.

Keywords: COVID-19; Threat; Immigrant; Attitudes; Pathogen; Common ingroup

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Introduction

Social psychological research has established that threatening events can significantly affect individuals' cognitions and behaviors (e.g., Xu & Mc Gregor, 2018). As such, natural catastrophes (e.g., earthquakes), man-made disasters (e.g., nuclear accidents) and violent conflicts (e.g., terror attacks) often generate some 'compensatory responses' (Jonas et al., 2014) such as attitudinal and behavioral shifts on domains that are not directly related to the immediate situation. For example, research shows that individuals are likely to stereotype outgroups more after reminders of one's mortality (see Castano, Yzerbyt, Paladino & Sacchi, 2002). Hence, although this mostly right-shift movement as a response to societal threat to safety and perceived control often serves as a psychological mechanism that provides individuals with some adaptive functions that help in the reduction of anxiety and uncertainty (e.g., Mirisola, Roccato, Russo, Spagna, & Vieno, 2014), it may undermine tolerant attitudes towards outgroups such as immigrants (Van Bavel et al., 2020). However, external threats may not unconditionally lead to derogatory behaviors towards outgroups; when faced with collective danger and threat, people also show a natural tendency to seek affiliation and proximity, express mutual aid, and act collaboratively, suggesting that one possible collective response to pandemics may also be *alliance* under threat (Mawson, 2005; Moreno, 2018; Van Bavel et al., 2020). Due to its unexpected nature, lethality, and global spread, we argue that the current pandemic of COVID-19 - a novel coronavirus-induced disease (WHO, 2020) – is likely to stand as powerful threat that can relate to attitudes towards immigrants. Using two different methodologies (Google trends analysis in Study 1 and correlational data in Study 2), we investigated the extent to which Turkish natives' perception of COVID-19 threat relates to their attitudes towards Syrian

immigrants, testing two possible, but opposite, pathways whereby COVID-19 threat may either undermine or promote positive immigrant attitudes.

Pathogen threat and outgroup attitudes

Current models of reactions to pathogen threats such as COVID-19 can be generally binned into two broad classes, with one approach emphasizing an evolutionary perspective to groups' responses to external pathogen threats, leading to more avoidant and exclusive outgroup behavior, and the other highlighting the role of unification and collaboration under threat, leading to more inclusive and tolerant outgroup behaviors. Although both approaches highlight contradictory responses to outgroups during pandemics, they also converge on the adaptive functions of societal responses to pandemics; with one focusing on the avoidance of disease spread, the other one encouraging group level functions of the societies, such as intergroup helping and cooperation.

The evolutionary approach

A first type of approach to explore intergroup responses to pandemics (e.g., behavioral immune system theory, parasite model of democratization, see Karwowski et al., 2020) draws upon evolutionary biology theorizing and aims to understand how historical ecological pathogen prevalence has shaped a series of psychological adaptions to cope with the dangers of pandemics. Accordingly, pathogens come with high costs for their hosts, which have facilitated the emergence of anti-pathogen defense mechanisms. Thus, in addition to a physiological immune system (dealing with pathogens within the organism), modern humans have likely developed an external immune system. This system (labelled 'behavioral immune system'; Schaller, 2011) evolved to detect and avoid physical contact with pathogens before they enter the organism.

A key feature of the behavioral immune system feature is that it fosters – by design - behaviors aiming to decrease interpersonal contacts, thus reducing the likelihood of contracting infectious diseases, offering evidence for the positive association between pathogen threat and conservative social-political ideologies (e.g., Thornhill, Fincher, & Aran, 2009). For example, while nations that display higher parasite stress were found to show greater adherence to traditional social norms (Tybur et al., 2016), perception of infectious disease threat has been related to greater conformism (Murray & Schaller, 2012; Wu & Chang, 2012) and ethnocentrism (Navarrete & Fessler, 2006). Similarly, ecological pathogen prevalence is associated with the adoption of cultural norms and practices which tend to be more socially conservative (e.g. collectivistic cultures; Varnum, & Grossmann, 2016). Other research has shown that state-level prevalence of non-zoonotic diseases was a potent predictor of 2016 conservative votes in the US presidential election (Zmigrod, Ebert, Götz, & Rentfrow, 2020) and pathogen threat is likely to increase a direct preference for conservative parties (Terrizzi, Shook, & McDaniel, 2013).

As such, conformist attitudes and right-wing ideologies triggered by disease threat in the society are directly relevant to negative behavioral responses towards outgroups (e.g., Duckitt & Sibley, 2007), especially towards immigrants who have been historically blamed for disease outbreaks (Navarrete & Fessler, 2006) and who have been associated with disease transmission (e.g., Cottrell & Neuberg, 2005). Moreover, given that outgroup distancing may be especially adaptive for avoiding the spread of infections, since outgroup members are more likely to carry pathogens to which members of the ingroup have not yet developed immunity, outgroups who are often dehumanized and associated with animals known with disease transmission such as cockroaches, rats, and flies, are likely to receive discriminatory behaviors when faced with pathogen threat (Faulkner, Schaller, Park, & Duncan, 2004; Suefeld & Schaller, 2002).

From an evolutionary psychology perspective then, it could be expected that perceived COVID-19 threat would trigger greater immigrant threat and thereby increase xenophobic attitudes. In line with this assumption, chronic disease threat caused by Avian influenza pandemic, for example, has been found to increase exclusionary immigrant attitudes through increased social dominance orientation, as well as greater beliefs in a dangerous world (Green et al., 2010). Recent evidence on COVID-19 pandemic has also shown that COVID-19 threat perception may instigate increased preference for conservative parties and leaders (Adam-Troian, Bonetto, Varet, Arciszewski, & Guiller, 2020; Karwowski et al., 2020;) and is linked with increased right-wing authoritarian attitudes (Imhoff & Lamberty, 2020; study 2) in Western Europe and the US. An original investigation from Sorokowski et al. (2020) demonstrated positive links between exposure to media content related to COVID-19 and prejudice against specific foreign out-groups in the UK (e.g. Italians; but not endogenous minorities). Likewise, Yamagata, Teraguchi, and Miura (2020) reported that negative attitudes towards Chinese (but not other group) foreigners was significantly associated with individuals' infection avoidance tendencies - using panel data among a Japanese representative sample.

Nevertheless, a single evolutionary approach to individuals' group-level responses to pandemics may be restricted for a number of reasons. First, evolutionary models of reaction to pathogen threat predict that individuals increase their adherence to group norms, which may imply identification to their ingroup – a consequence of increased collectivism and social conservatism under pathogen threat. But these models rarely specify which ingroup is targeted by these mechanisms (e.g. family, neighborhood, city, nation). Yet, different ingroups may imply different degrees of inclusivity of group members. For instance, identifying oneself based on a 'city' group membership leads one to consider inhabitants of the same city as part of one's

group, which could extend to inhabitants with an immigrant background (unlike identifying oneself as a member of an ethnic group for instance).

Second, previous research has shown that societal right shifts in attitudes after naturally occurring pathogen threats are likely to be small (Inbar, Westgate, Pizarro, & Nosek, 2016). Relatedly, preference for conservative values and parties may be generated by their stricter norm-enforcing orientation (see Adam-Troian et al., 2020), which could have benefits in time of pandemics (see Gelfand, Jackson, Pan, Nau, Dagher, Van Lange, & Chiu, 2020), but not necessarily by their anti-immigration policies. Thus, a right-shift under pathogen threat might not automatically lead to more xenophobic attitudes, and research shows that disease salience often leads to outgroup contact avoidance only among already prejudiced people (Kringgs et al., 2012). All these issues suggest the need to incorporate other group-level aspects of pandemics that may predict changes in intergroup attitudes. As such, COVID-19 is an infectious disease caused by a pathogen (SARS-COV-2), but its impact around the world makes COVID-19 a *global* pandemic, requiring a more extensive examination of its group-level outcomes, taking into account various social-psychological processes involved.

The common ingroup identity approach

Research on Social Identity Theory (Tajfel, 1978, 1981) has extensively investigated how psychological identification with various groups shape perceptions of group boundaries that affect prejudice and intergroup attitudes. A key finding is that when individuals identify themselves as part of a common in-group through a higher level of self-categorization (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987), previous ingroup-outgroup boundaries change, resulting in the reduction of negative intergroup attitudes (Brewer, 2010). Accordingly, the Common Ingroup Identity Model (Gaertner & Dovidio, 2000) predicts that, when individuals

from different groups identify themselves as part of a common – superordinate - group, previous biases due to distinctive intergroup boundaries disappear and intergroup relationships become more harmonious. This hypothesis is supported by decades of empirical research using observational, experimental and longitudinal designs (see Gaertner, Dovidio, Guerra, Hehman, & Saguy, 2016 for a review).

Although studied less extensively, tragic societal events such as naturally occurring disasters, wars, as well as pandemics also have the power of creating opportunities for reconciliatory actions between and within governments and communities (Van Bavel et al., 2020). Hence, according to the common ingroup identity model, perceiving one's ingroup and the outgroup in the 'same boat' during an external threat is likely to induce similarities between the two groups and therefore improve intergroup attitudes and behaviors (e.g., Gaertner & Dovidio 2009). Such a common ingroup identification, in turn, is likely to predict lower perception of outgroup threat (Riek et al., 2006), less outgroup devaluation and ingroup favouritism (e.g., Gaertner & Dovidio, 2000), as well as more intergroup helping (Levine, Prosser, Evans, & Reicher, 2005).

Drawing on the Common Ingroup Identity Model, other research has shown that feelings of 'inclusive victimhood' where different group members identify with a single, unique, inclusive victimhood shared with the outgroup, are likely to produce a greater perception of similarity, which consequently brings more collective action, intergroup assistance, and solidarity across various groups (Vollhardt, 2015; Vollhardt & Bilali, 2014). Experimental research also confirms such theoretical accounts, demonstrating common victim identification to lead to a decreased perception of intergroup competition (Shnabel, Halabi, & Noor, 2013) and a focus on shared humanity to improve intergroup attitudes in conflictual settings (Wohl &

Branscombe, 2005). Among few empirical studies conducted in the context of disasters, Vezzali, Cadamuro, Versari, Giovannini, and Trifiletti (2015) tested the common ingroup identity model in Italy after powerful earthquakes in 2012 and found that perceived earthquake threat among Italian children led to an increased perception of belonging to a common ingroup including both Italian and immigrant children, thereby resulting in more positive attitudes and intergroup helping behavior.

Because of its global nature as an infectious disease, COVID-19 is a prototypical example of external threats that are likely to trigger identification with an inclusive common ingroup, typically at the national and humanitarian level (e.g. war-like slogans, public health messages emphasizing the common national in group, rituals in support for healthcare workers… see Flade, Klar, & Imhoff, 2019). Other real-life examples include international cooperation acts between various countries donating each other surpluses, medical care, and equipment. In fact, UN Department of Economic and Social Affairs published briefs that consider COVID-19 as a transformative event that can reduce social inequalities especially through expanding systems for the universal provision of quality public services and encouraged the sharing of knowledge and science across the world (UN/DESA, 2020), thereby, implying a call for international and national unification while fighting with the pandemic. Lately, other theoretical work has also drawn attention to the importance of investigating COVID-19 from a social identity approach, focusing on a shared group membership emerging from pandemics (Cruwys, Stevens, & Greenaway, 2020; Drury, Reicher, & Stott, 2020; Templeton et al., 2020). Hence, from the perspective of common ingroup identity model, we expected that the perception of COVID-19 threat could actually lead to decreased negative attitudes towards immigrants.

The current study

The current study aimed to investigate the associations between the perception of COVID-19 threat and attitudes towards immigrants, through two studies using 1) analysis of Google Trends data linking perceived and real COVID-19 threat to xenophobic attitudes, 2) correlational data examining the role of perceived COVID-19 threat on attitudes, support for pro-immigration policies, as well as helping intentions towards immigrants via increased immigrant threat and common ingroup identification. Accordingly, we set out to investigate our research questions in Turkey, in relation to attitudes towards Syrian immigrants. The influx of Syrian immigrants to Turkey has started after the Civil War in Syria in 2011 and has gradually increased to over 3.5 million Syrians living in Turkey (UNHCR, 2020). While Turkish people has shown initial empathy and hospitality towards Syrian refugees, accompanied with humanitarian concerns supporting 'Muslim Brothers' (Lazarev & Sharma, 2017; Yitmen & Verkuyten, 2018), perceptions of threat and unease with the presence of Syrian refugees has increased gradually (Erdoğan, 2014; Yitmen & Verkuyten, 2018).

The current study makes a number of contributions to the study of disease threat from a social psychology perspective by investigating the perception of threat related to a recent global pandemic – COVID-19, which has spread to over 200 countries and resulted in over 500.000 deaths (WHO, 2020). Turkey, has been a prominent country affected by COVID-19, currently ranking within the top 10 countries with the highest numbers of actual cases. Moreover, the Syrian refugee population in Turkey stands as one of the most affected groups by the pandemic, due to their insufficient means to reach adequate healthcare services and their compulsion to continue to work (Dailysabah, 2020). Hence, social exclusion and discriminatory attitudes towards vulnerable groups may constitute potent risk factors for the physical and mental health of immigrants, as well as for intergroup violence related outcomes (Celebi, Verkuyten, & Bagci,

2017; Haslam, McMahon, Cruwys, Haslam, Jetten, & Steffens, 2018; Troian, Baidada, Arciszewski, Apostolidis, Celebi, & Yurtbakan, 2019). This suggests that the investigation of the threat-regulation mechanisms that shape attitudes towards immigrants is of paramount importance for host societies like Turkey, where violence towards Syrians is highly prevalent (Wringe et al., 2019).

Theoretically, although previous research has examined various pandemics from the evolutionary psychology approach, highlighting shifts towards more rightist ideologies and focusing on the exclusionary role of pathogen threat (e.g., Faulkner et al., 2004; Navarrete & Fessler, 2006), to our knowledge, no previous research has empirically tested the dual role of disease threat on intergroup attitudes, complementing pathogen threat approach with social identity theories. In the light of our theoretical assumptions based on these two perspectives, we hypothesized that COVID-19 could impact intergroup attitudes through two pathways. While Study 1 included an analysis of Google Trends data with an initial exploration of the direct associations between COVID-19 threat and xenophobia, Study 2 included a more nuanced mediation process, testing simultaneously the possible exclusionary and inclusionary effects of COVID-19 threat on outgroup attitudes, support for anti-immigrant policies and helping intentions, via increased immigrant threat (H1) and common ingroup identification (H2).

Ethical and transparency statement

The two studies were conducted in accordance with the 1964 Helsinki declaration (World Medical Organization, 1964) and its later amendments, the Turkish and French legislation on research involving human participants, the ethical principles of the French Code of Ethics for Psychologists (Commission Nationale Consultative de Déontologie des Psychologues, 2012), and the 2016 APA Ethical Principles of Psychologists and Code of Conduct (American

Psychological Association, 2017). Study 2 was approved by an IRB at Sabanci University (n° FASS-2020-26). No participant data were suppressed from raw database. The raw data underlying our findings are openly accessible at https://osf.io/6ycxk/?view_only=0bcdcd35838d4ec687ebadd3d932f81f

Study 1

Materials and Procedure

This first study was designed to assess the existence of a link between COVID-19 threat and attitudes towards minorities at the country level. Turkey is divided into 81 provinces - the equivalent of counties – each comprising an administrative capital. Therefore, we had available data on actual COVID-19 cases in each province, which allowed for conducting an archival study (N = 81). All data were extracted as of April 23, 2020.

COVID-19 Threat

We used two different measures of COVID-19 threat. First, we used the actual numbers of COVID-19 cases per province as of as a measure of real (objective) threat (total n = 58,685). In addition, we computed an index of online searches (Google Trends) for COVID-19-related content to obtain a measure of perceived (subjective) threat. Briefly, Google Trends provides for the frequency at which search terms are typed across geographical areas (Google, 2017). These data are publicly available, and search entries derived from Google Trends are predictive of real-life phenomena (e.g. stock market fluctuations, Preis, Reith, & Stanley, 2010; suicide rates, Adam-Troian & Arciszewski, 2020; for more information regarding the inner workings and applications of Google Trends data see also Jun, Yoo, & Choi, 2018). This means that online searches would allow us to assess *spontaneous* population-level exposure to COVID-19 related information, hence, providing an ecological measure of pathogen threat.

Therefore, we extracted all search frequencies for '*korona*', '*koronavirüs*' (Turkish terms for the disease), '*coronavirus*' (English term frequently used in Turkish media) and '*covid-19*' (generic scientific term also widely used in public communications surrounding the pandemic). All these were averaged and sum scored to create an index of perceived pathogen threat.

Anti-immigrant Attitudes

Online search data also allowed us to create a proxy measure for xenophobic attitudes, which are hard to capture in the absence of official count statistics (e.g. number of hate crimes or complaints for discrimination counted by relevant institutions and/or branches of the State). For example, prior research has demonstrated that the frequency of racial insults from Google Trends could be a good proxy for racial bias and even predicted decreased votes for Barack Obama (compared to other democratic candidates, see Stephens-Davidowitz, 2014). Likewise, searches including the 'n-word' was a reliable predictor of preterm birth and lower birth weight among Black US citizens (Chae, Clouston and al., 2018). Still, these indicators were not possible to transpose to another cultural, historical and political context (Turkey). To solve this problem, we drew upon research showing that search frequency for political movements predicted political behavior (e.g. tea party mobilization correlates highly with searches for the term 'tea-party' in the US; DiGrazia, 2017). If these types of associations between party name search term and party votes - for instance - held in the Turkish cyberspace, then we could simply obtain a proxy for xenophobic attitudes by looking at search terms for extreme-right wing, nationalistic and anti-immigration parties.

We tested this assumption by looking at the relationship between searches for the two main far-right parties in Turkey (IYI and MHP) and vote shares during the 2018 Turkish parliamentary election. We created a province-level anti-immigrant attitude index by averaging

the sum score of online searches for '*IYI parti*' and '*MHP*' (collected from 2004 to June the 23rd of 2018; one day before the election; $N = 81$). The anti-immigrant attitude index was not related to votes for the main left-wing party (CHP, social democratic), $r(80) = .04$, $p = .67$ and only correlated slightly with the main right-wing party (AKP, conservative), $r(80) = .24$, $p = .03$. As expected, there was a strong positive association between anti-immigrant attitudes and total votes for far-right parties (IYI and MHP, respectively civic and ethnic nationalists), $r(80) = .61$, $p < .001$. In addition, our index of anti-immigrant attitudes negatively predicted province-level votes for the main pro-minority party (HDP, far-left and Kurdish pro-minorities), $r(80) = .41$, $p < .001$. Therefore, we concluded that online searches for xenophobic parties could constitute a reliable proxy for xenophobic votes, hence anti-immigrant attitudes.

Therefore, we extracted the frequency of online searches for '*IYI parti*' and '*MHP*' during the COVID-19 pandemic (from January 1st of 2020 to April 23 of 2020). We average-sum scored them to obtain our current measure of province-level anti-immigrant attitudes.

Covariates

To rule out potential confounds, we used the most up-to-date county-level GDP per capita (M = ₺28,992 SD = ₺10,025) and unemployment levels (M = 9.95%, SD = 5.08) as covariates (2017). These were chosen because economic insecurity has been previously shown to be one of the main structural predictor of far-right votes (see Vlandas, & Halikiopoulou, 2019). In addition, the influence of 2018 voting shares for xenophobic parties will also be tested in our models.

Results

Correlation analyses

As can be seen from Table 1, number of actual COVID-19 cases and perceived threat from COVID-19 were only slightly linked, $r(80) = .20$, $p = .08$, confirming that they are separate constructs. Findings demonstrated that, while the number of COVID-19 cases was not associated with our index of anti-immigrant attitudes, $r(80) = .03$, $p = .77$, it was negatively correlated with perceived COVID-19 threat, $r(80) = -.33$, $p = .003$. Perceived threat was also strongly and negatively associated with 2018 xenophobic votes, $r(80) = -.45$, $p =< .001$, which was, in turn, positively linked with anti- immigrant attitudes, $r(80) = .41$, $p < .001$.

Table 1. *Means, Standard Deviations and Pearson correlation coefficients for measures of COVID-19 objective (cases) and subjective (searches) threat, Anti-Immigrant Attitudes, GDP per capita, Unemployment and 2018 Xenophobic vote rates*

	Mean (SD)	1	2	3	4	5	6
1.Objective COVID-19 threat	725 (4187)	-	.20†	-.03	.47***	.09	-.06
2.Subjective COVID-19 threat	72.5 (5.7)		-	-.33**	.02	.15	-.45***
3.Anti-immigrant attitudes	37.7 (15.5)			-	.07	-.47***	.41***
4.GDP	-				-	-.14	.24*
5.Unemployment	9.95 (5.1)					-	-.37***
6.2018 xenophobic votes	21.8 (8.7)						-

Notes. $^{\dagger}p < .10$, $*p < .05$, $**p < .01$, $***p < .001$.

Regression analyses

To assess the impact of potential confounds of the relationship between perceived COVID-19 threat and anti-immigrant attitudes, we decided to run stepwise OLS regression models, with inclusion of covariates at each step. As can be seen in Table 2, the link between COVID-19 threat and anti-immigrant attitudes was of $b = -.89$, 95% CI [-1.48, -.32], $p = .003$ and remained largely unchanged, when controlling for economic factors, $b = -.72$, 95% CI [-

1.25, -.19], p = .009. However, the introduction of 2018 xenophobic votes substantially decreased the size of this association to b = -.50, 95% CI [-1.09, .09], p = .097, although it remained of comparable strength to the link between 2018 xenophobic votes and (2020) anti-immigrant attitudes, b = .35, 95% CI [-.06, .77], p = .096.

Table 2. *Regression models of the link between COVID-19 perceived threat and anti-immigrant attitudes successively adjusting for GDP/unemployment (economic factors) and 2018 xenophobic votes (ideology N = 81)*

	B	*SE*	*95%CI*	*t*	*F(Df)*	$r^2_{adjusted}$	*P*	Δr^2
Step 1					9.49(1,79)	.10	.003	
Threat	-.89	.29	[-1.48, -.32]	3.08			.003	
Step 2					10.29(3,77)	.26	<.001	.18***
Threat	-.72	.27	[-1.25, -.19]	2.70			.009	
Unemployment	-1.30	.30	[-1.90, -.70]	4.33			<.001	
GDP	-.01	.01	[-.01, .01]	.15			.88	
Step 3					8.61(4,76)	.28	<.001	.03†
Threat	-.50	.30	[-1.09, .09]	1.68			.097	
Unemployment	-1.13	.31	[-1.76, -.51]	3.62			<.001	
GDP	-.01	.01	[-.01, .01]	.27			.79	
2018 Xeno. Votes	.35	.21	[-.06, .77]	1.69			.096	

Notes. †p < .10,***p < .001.

Discussion

Overall, Study 1 provided some evidence in favor of a potential link between COVID-19 threat and attitudes towards immigrants. Our results suggest that perceived threat (i.e., the extent to which individuals expose themselves to COVID-19 related content) plays a key role in this process compared to objective threat (i.e., number of COVID-19 cases). This replicates typical patterns from the literature which highlights the weight of threat perceptions in shaping xenophobic attitudes (e.g. romaphobia, see Ljujic, Vedder, & Dekker, 2012). Still, some issues remained unanswered. First, the introduction of covariates revealed that the link between COVID-19 threat and anti-immigrant attitudes might be weaker than expected. While this may suggest that the effect is small itself, but may also indicate the use of different variables, as well as contextual issues. For instance, although unemployment is supposed to drive far-right votes, in the Turkish context this factor also correlates with the proportion of ethnic minorities in the population (higher unemployment in Kurdish-majority areas in South-Eastern Turkey), which make up a sizeable proportion of far-left pro-minority votes. This can explain why here, unemployment was negatively associated with our anti-immigrant attitudes index. Therefore, although archival investigations can be informative, their results need replication using validated measures for the different constructs being investigated. Second, it should be noted that results obtained on province-level data might not hold at an individual level of analysis (i.e. ecological fallacy). Third, in Study 1, we could only predict attitudinal responses to immigrants as a result of COVID-19 threat, whereas a further investigation of more behavioral indices of outgroup attitudes such as helping intentions and support for pro-immigrant policies may help in the better understanding of reactions towards immigrants. Finally, and most importantly, Study 1 was unable to show any explanatory mechanism in the association between COVID-19 threat and

anti-immigrant attitudes, overall necessitating a second study using self-report data and exploring specifically how COVID-19 threat is related to anti-immigrant attitudes.

Study 2

Overcoming some of the limitations involved in Study 1, Study 2 tested a more extensive pathway from perceived COVID-19 threat to attitudes towards immigrants, helping intentions, as well as support for pro-immigrant policies and examined two specific pathways from perceived COVID-19 threat to outgroup outcomes: 1) the exclusionary pathway occurring via increased immigrant threat (H1) and 2) the inclusionary pathway occurring via increased common ingroup identification (H2).

Participants and Procedure

We aimed to recruit at least 250 participants to obtain reliable and stable estimates (see Schönbrodt, & Perugini, 2013). A total of 294 participants (184 Female, 109 Male, 1 Other; M_{age} = 22.68, *SD* = 3.97) were recruited through the research participation scheme at a small private university in Istanbul and through convenience sampling via the help of research assistants. This sample size would allow us to obtain 80% power at alpha = .05 for effect sizes down to *r* = .16 (or r-squared = .03), which we deemed sufficient for the type of effects under investigation. The majority of participants reported to have a Turkish ethnic background (91.8%), while the rest described it as 'Other'. None of the participants reported being personally affected by COVID-19. The mean self-reported income level ranging from 1 (*very low*) to 7 (*very high*) was 5.00 (*SD* = .91). The mean educational level reported by the highest educational level completed (1 = *Primary school*, 2 = *Secondary school*, 3 = *High school*, 4 = *Bachelor's degree*, 5 = *Master's / Doctoral degree*) was 3.22, *SD* = .51. Political orientation assessed by a single item ('How

would you describe your political orientation?', ranging from 1 = *left* to 7 = *right*) was slightly left (*M* = 3.16, *SD* = 1.55).

Materials

Perceived COVID-19 threat was assessed by four items measuring the level of personal and societal level threat caused by COVID-19 pandemic (adapted from Green et al., 2010, 'To what extent are you worried about COVID-19?', 'To what extent do you think COVID-19 constitutes a potential threat in our country?', 'To what extent do you think COVID-19 will have destructive effects in our country?' and 'To what extent do you follow news concerning COVID-19 in the media?'). The response scale ranged from 1 (*not at all*) to 7 (*very much*). The reliability of the scale was good (Cronbach's Alpha = .73) and higher scores indicated greater perception of COVID-19 threat.

Immigrant threat was measured by six items adapted from previous outgroup threat measures (Gonzalez, Verkuyten, Weesie, & Poppe, 2008; Verkuyten, 2009) and including safety threat (e.g., 'The existence of Syrian immigrants increases security problems in Turkey), symbolic threat (e.g., 'Turkish norms and values are being threatened because of the presence of Syrian immigrants'), and realistic threats (e.g., 'Because of the presence of Syrian immigrants, Turks have hard time to find jobs'). The response ranged from 1 (*Strongly disagree*) to 7 (*Strongly agree*). A principal components factor analysis with Direct Oblimin Rotation revealed that all items loaded on a single threat construct (total variance explained: 67.62%), confirming the unidimensional nature of this variable (Cronbach's Alpha = .90).

Common ingroup identification was assessed by a single item ('When you think about Syrian immigrants, to what extent do you see them as victims of COVID-19 like your ingroup?') adapted from Eller and Abrams (2004). The response scale ranged from 1 (*not at all*) to 7 (*very*

much) and higher scores indicated a greater identification under the superordinate COVID-19 victim identity.

Outgroup attitudes were measured by a feeling thermometer (Converse et al., 1980) asking participants to rate their warmth towards Syrian immigrants from 0 degree (*extremely unfavourable*) to 100 degrees (*extremely favourable*), higher scores indicating more positive outgroup attitudes.

We measured *outgroup helping intentions* with two items ('I would like to donate Syrian immigrants who are the victims of COVID-19' and 'I would like to support projects that help Syrian immigrants who suffered from COVID-19', $r = .89$, $p < .001$). The response scale ranged from 1 (*strongly disagree*) to 7 (*strongly agree*), with higher scores indicating greater willingness to help outgroup COVID-19 victims.

Support for pro-immigration policies was measured with a single item (Doosje et al., 2009) asking participants to indicate their level of agreement on Syrian immigrants' intake to Turkey ('Turkey should allow none / few / some / many Syrians to come and live here'), with higher scores indicating greater support for policies favoring Syrian immigrants' intake to Turkey.

Analytic Strategy

Data were analyzed with MPlus Version 7 (Muthen & Muthen, 1998-2020) with Maximum Likelihood Estimation. Wherever possible, we adopted a latent modelling approach. For outgroup threat, we used item parceling combining items into two parcels randomly, each formed of the averaged three manifest items, following suggestions by Little, Cunningham, Shahar, and Widaman (2002). The fit of the models was assessed by the following cut-off values: $\chi^2/df < 3$, CFI $\geq .93$, RMSEA $\leq .07$, and SRMR $\leq .07$ (Bagozzi & Yi, 2012; Marsh, Hou,

& Wen, 2004). Since the indirect effects are not normally distributed, we also bootstrapped with 1000 resamples to test the robustness of our findings at 95% confidence intervals.[1]

Results

Means and standard deviations were presented on Table 3.

Table 3. *Means, standard deviations and pearson correlation coefficients for measures of COVID-19 threat, Outgroup threat, Common Ingroup Identity, Attitudes, Helping Intentions and Support for Policies towards Syrian Immigrants.*

	Mean (SD)	1	2	3	4	5	6
1. COVID-19 threat	4.94 (1.16)	-	.15**	.18**	.01	.14*	-.07
2.Outgroup threat	4.14 (1.51)		-	-.13*	-.62***	-.49***	-.52***
3.CIIM	4.77 (1.91)			-	.25***	.31***	.15*
4.Attitudes	44.27 (31.24)				-	.62***	.52***
5.Helping intentions	4.45 (1.98)					-	.47***
6.Support for policies	1.73 (.88)						-

Notes. *$p < .05$, **$p < .01$, ***$p < .001$.

The measurement model with the latent variables demonstrated that the data fitted well, $\chi^2(17) = 38.01$, $\chi^2/df = 2.24$, CFI = .98, RMSEA = .065, SRMR = .04, with all items loading significantly on the latent variables (loadings > .60, all $p < .001$). The final structural model including direct paths from COVID-19 threat to all outcome variables, as well as *a priori*

[1] Since age, gender, socio-economic status and political orientation were not associated with the main outcome variables (or only correlated weakly), we did not include these variables in the model as covariates.

correlations between common ingroup identification and outgroup threat revealed good fit, $\chi^2(32) = 65.35$, $\chi^2/df = 2.04$, CFI = .98, RMSEA = .060, SRMR = .038. As expected, COVID-19 threat significantly predicted higher levels of immigrant threat (β = .14, $p = .03$), as well as common ingroup identification (β = .19, $p < .001$). In turn, immigrant threat predicted less positive outgroup attitudes (β = -.62, $p < .001$), less helping intentions (β = -.52, $p < .001$), and less support for pro-immigration policies (β = -.54, $p < .001$). Common ingroup identification was positively associated with more positive outgroup attitudes (β = .14, $p = .002$) and more helping intentions (β = .19, $p < .001$), but not with support for policies (β = .06, $p = .22$). The direct paths from COVID-19 threat to outgroup attitudes (β = .08, $p = .13$) and support for policies (β = .03, $p = .62$) were not significant, whereas it was significant and positive in relation to helping intentions (β = .21, $p < .001$).

The indirect effects from COVID-19 threat to outgroup attitudes were significant via both immigrant threat (IE = -2.51, *SE* = 1.22, $p = .04$, 95% CI [-5.17, -.28]) and common ingroup identification (*IE* = .90, *SE* = .41, $p = .03$, 95% CI [.30, 1.94]). Similarly, the association between COVID-19 threat and helping intentions was significantly mediated by outgroup threat (IE = -.13, *SE* = .07, $p = .04$, 95% CI [-.28, -.02]) and common ingroup identification (IE = .07, *SE* = .03, $p = .02$, 95% CI [.03, .16]), in opposite directions. COVID-19 threat also related to lower support for pro-immigrant policies through increased immigrant threat (IE = -.06, *SE* = .03, $p = .04$, 95% CI [-.13, -.006]), but not through common ingroup identification (IE = .01, *SE* = .01, $p = .30$, 95% CI [-.003,.04]).

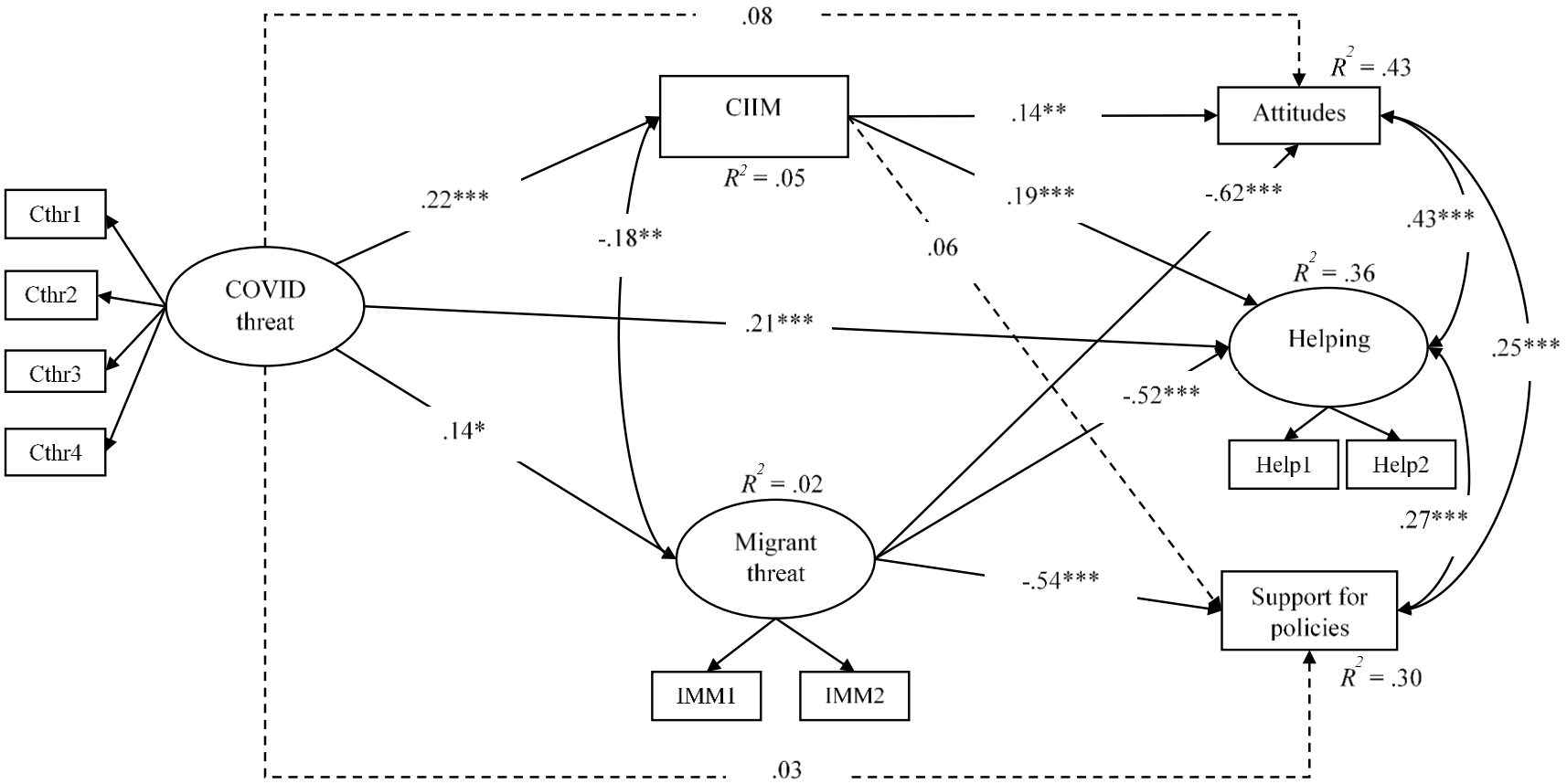

Figure 1. Final mediation from COVID-19 threat to attitudes, helping intentions and support for policies through common ingroup identification and immigrant threat.

Discussion

Building on the findings of Study 1 which indicated a negative association between COVID-19 threat perception and anti-immigrant attitudes at the country level, Study 2 demonstrated some evidence supporting both H1 and H2. More specifically, in line with the pathogen threats' exclusionary effects on outgroup attitudes (H1), we found that a higher level of COVID-19 threat perception was related to increased threat related to immigrants, which was in turn strongly associated with less positive attitudes, lower helping intentions, as well as lower support for pro-immigration policies. On the other hand, supporting our theoretical assumption about the unifying effect of COVID-19 threat (H2), we observed that the perception of threat caused by COVID-19 induced a common ingroup identification process under the more extensive 'COVID-19 victim' social category, which was, in turn, significantly associated with more positive outgroup attitudes and lower support for anti-immigration policies. While the path from common ingroup identification to helping intentions was not significant, suggesting that such an inclusive social identity may not directly promote more behavioral responses to immigrants, COVID-19 threat was directly associated with more outgroup helping intentions. This may indicate that a pandemic threat by itself may be sufficient to promote intergroup helping responses, which is also in line with our findings in Study 1.

General Discussion

This series of studies investigated whether the perception of threat triggered by the current COVID-19 pandemic could have impacted attitudes towards Syrian immigrants in Turkey. This investigation was carried out in the light of both evolutionary and social identity approaches to pathogen-threat regulation. Overall, our studies revealed two critical empirical findings of interest. First, we observed that perceived COVID-19 threat was *directly* associated with increased favorable attitudes towards immigrants. Study 2 provided further

evidence that COVID-19 threat perception was also *indirectly* linked with both negative and positive attitudes and intentions towards immigrants, via two key mediating variables: immigrant threat perception and common ingroup identity.

First and foremost, our studies consistently showed some promising findings regarding the collaborative nature of the COVID-19 pandemic, such that the threat generated by the pandemic was related to a more positive view of immigrants directly at the country-level (Study 1), and both directly and indirectly at the individual-level (Study 2). Far from the stereotypical notion that individuals panic, become selfish, and xenophobic during crises such as pandemics (Drury, Reicher, & Stott, 2020), our results revealed that, under some circumstances, prosocial attitudes and behavioral intentions towards outgroups can actually arise as a reaction to pandemics, highlighting the pandemics' unifying effects through a newly emerging shared identity (Drury et al., 2020). The pandemic could well trigger an increase in prosociality among inhabitants of the same country – including immigrants who form the same group of COVID-19 victims. This is also consistent with the well-established finding that human reactions to threat typically involve increased prosocial behavior among communities (Dezecache, 2015). Thus, we argue that whenever possible, research investigations of societal threats' effects (including pandemics) on intergroup attitudes should integrate insights from the social and common ingroup identity models.

Relatedly, Study 2 also revealed COVID-19's potential detrimental effects for intergroup relationships, whereby threat caused by COVID-19 generalized to immigrant threat, leading to more negative attitudinal and behavioral responses to immigrants. This is in line with previous research on pathogen threat, suggesting external threat to stimulate negative responses to outgroups, mainly by shifting group members towards more rightist ideologies (e.g., Green et al., 2010). Nevertheless, the path from perceived COVID-19 threat to common ingroup identification seemed to be stronger than the path from COVID-19 threat

to immigrant threat, although immigrant threat was a better predictor of the overall attitudinal responses to immigrants than common ingroup identification.

The evidence for this dual pathway may indicate the existence of important individual-level moderators. Such moderators could be personality-related (Bacon, & Corr, 2020), or reflect the impact of other group-level processes. For instance, research suggests that the link between pathogen threat and xenophobic attitudes is moderated by collectivistic orientation in that collectivism reduces xenophobic responses under threat compared to individualism (see Kim, Sherman, & Updegraff, 2016). This could partly occur because interdependent self-conceptions (which are promoted by collectivism) seem to protect individuals from perceiving pandemics as threatening due to an increased sense of safety (Salvador, Kraus, Ackerman, Gelfand, & Kitayama, 2020). This may also explain why among Turkish natives, who are in general more collectivist than individualist (Ayçiçeği-Dinn & Caldwell-Harris, 2011), perceived COVID-19 threat was related to more pro-immigrant attitudes. Other possible culturally-relevant boundary conditions may include prevalent social norms among different groups, shaping the attitudes of individuals who increasingly identify with these groups in response to pathogen threat (Hogg & Reid, 2006). All these reasons warrant further investigation and indicate potentially fruitful lines for future research.

Apart from cultural factors, how COVID-19 pandemic is experienced at the individual level may also play an important role in shaping individuals' group-based responses. Lately, it has been found that COVID-19 pandemic has influences on the emergence of psychological symptoms such as depression and anxiety-related syndromes (e.g., Fiorillo & Gorwood, 2020; Huang & Zhao, 2020), as well as trust and well-being (Sibley et al., 2020), which may determine the extent to which COVID-19 threat is related to more or less positive outgroup attitudes. Further research should also investigate a variety of target outgroups to

draw more general conclusions about COVID-19 effects on general intergroup relationships, focusing on various intergroup emotions that may play a role on attitudinal responses (Cottrell & Neuberg, 2005). For example, although we considered an immigrant group as a salient outgroup, the extent to which immigrants were evaluated as real 'foreigners' in the first place during the pandemic may be examined in future research.

Finally, it is important to note that our results were obtained only when assessing subjective (perceived) rather than objective (real) threat. This has direct applied implications, because the present studies suggest that there should be some degree of malleability to COVID-19 threat perceptions, which could therefore be leveraged to shape intergroup attitudes downstream. Indeed, we believe perceived pathogen threat to be of utmost importance in the case of diseases like COVID-19 given the confinement context, the – relatively – low mortality (< 3%) from COVID-19, and the proportion of asymptomatic COVID-19 positive individuals (e.g. Bai, Yao, Wei, Tian, Jin, Chen, & Wang, 2020; compared to diseases like Ebola or Creutzfeld-Jakob). All these elements combined hint us that the majority of individuals may not be expected to form direct threat estimates based on objective cues in their immediate environment (e.g. sick individuals in the streets, relatives in hospitals, direct witnessing of corpses and so on). In this context, the role of communication, through journals, online press, television programs and government officials could have significant effects in promoting or inhibiting intergroup solidarity through a reduced or heightened sense of threat *independently* of the country's ability to manage the pandemic efficiently. This hypothesis could be investigated in future cross-country research to examine whether xenophobic attitudes could vary according to State communications (i.e. minimizing the threat) and efficacy of government action in protecting citizens (e.g. presence/absence of masks for healthcare workers and citizens; number of random PCR tests conducted among the population).

Among some of the caveats that bound the interpretations of the present results, we can obviously include the nature of our analyses which, although constrained by careful theoretical considerations, warrants cautious causal interpretations. Relying on converging evidence from other countries and populations, as well as empirical studies from previous pandemic and disease research, we are confident that COVID-19 threat may affect anti-immigrant attitudes, but still our research does not refute the reverse causal path whereby people who are already prejudiced towards immigrants would be more vulnerable to uncertainty caused by COVID-19 and thereby feel more threat about the disease. As such, the specific pathways through which the effect is supposed to occur remain preliminary. Moreover, our studies were conducted in a specific context (Turkey) where collectivism is prevalent, hence potentially inhibiting some of the negative effects of COVID-19 threat on anti-immigrant attitudes (Salvador et al., 2020). In line with this, Syrian refugees in Turkey are mostly Muslim, which may facilitate the generation of common ingroup identities too. Further research in individualistic contexts with important divergences in native-immigrant populations on variables such as religion or ideology should be conducted to assess the generalizability of our findings.

In conclusion, our results from Study 1 obtained with province-level data and indirect behavioral measures (volume of online searches) were replicated in Study 2 with individual-level data using direct self-reported outcomes, providing robust evidence for the existence of COVID-19's paradoxical effects on intergroup attitudes. In addition to a direct negative effect that may decrease prosocial behavior towards immigrants among the Turkish population, we highlighted that the pandemic could also increase individuals' perceptions of immigrants as part of a common group, thereby strengthening positive attitudes towards immigrants who are amongst the most vulnerable outgroups during the pandemic. Of crucial interest for managing the social and intergroup consequences of COVID-19, we hope that

these findings bring more research on how the pandemic impacted intergroup relations. Knowledge on which to base practical recommendations on this issue will be crucial in the coming months, especially to mitigate the potential consequences of the economic crisis to come.

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