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# The roles of social norms and leadership in health communication in the context of COVID-19☆

Serap Akfırat [a,*], Fatih Bayrak [b], Emir Üzümçeker [a], Tolga Ergiyen [c], Taylan Yurtbakan [d], Mete Sefa Uysal [e]

[a] Dokuz Eylul University, Department of Psychology, Turkiye
[b] Baskent University, Department of Psychology, Turkiye
[c] Izmir University of Economics, Department of Psychology, Turkiye
[d] İstanbul Medipol University, Department of Psychology, Turkiye
[e] Friedrich Schiller University Jena, Department of Social Psychology, Germany

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ABSTRACT

The global struggle with the COVID-19 pandemic has lasted for almost three years. Although national and local leaders have often called on the public to comply with preventive measures through health communication, large sections of society sometimes violated precautions and did not adequately follow these calls. We propose that social norms and leaders' identity entrepreneurship characteristics could be essential in effective health communication. In line with this notion, we investigated the effects of social norm types and leadership on complying with preventive measures, the intention to be vaccinated, and prosocial behavioral tendency through a high-powered experiment that focused on three factors: leadership quality (presence/lack of entrepreneurship), descriptive norm (supportive/obstructive), and injunctive norm (supportive/obstructive). Results showed that when support for injunctive and descriptive norms was present, people tended to more readily adhere to preventive measures, get vaccinated, and engage in prosocial behavior. There was also a significant effect of the interaction between descriptive and injunctive norms on compliance with preventive measures. The compliance level was highest when both norm types were supportive and lowest when both were obstructive. The effect decreased in the discrepant norms condition, where one type of norm was supportive and the other obstructive. There is also a significant interaction between leadership and the descriptive norm, indicating that a combination of an entrepreneur leader and a supportive descriptive norm increases compliance with the preventive measure. We discussed the role of leadership and social norms in effective health communication.

People worldwide have been struggling with the COVID-19 pandemic for almost three years. Throughout these years, it has become clear that the three most effective methods for preventing the spread of coronavirus are social distancing, vaccination, and following hygiene rules. Studies also show leaders might be crucial in directing society toward healthy behaviors in crises and ambiguous times, such as the COVID-19 pandemic (Antonakis, 2021; Muldoon et al., 2021). Parallel to these findings, local and national authorities frequently employ health communication to urge the public to comply with these regulations. Meanwhile, the media has frequently published images of crowds violating social distancing rules and public surveys showing widespread non-compliance with COVID-19 testing and vaccinations. Although these messages were intended to draw attention to the severity of the risk, they also carried the potential to create the opposite effect by leading people to think such behaviors are common and acceptable. That is, they might have conveyed strong normative content that could have spread risky health behaviors (e.g., Yuen et al., 2020). In other words, while it was strongly recommended to comply with the preventive measures, which might have corresponded with injunctive norms, witnessing situations where large masses violate preventive measures might have served as a descriptive norm. Such obstructive social norms, therefore, might hinder the effectiveness of health communication and

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* Corresponding author. Department of Psychology, Dokuz Eylül University, Izmir, Turkey.
*E-mail address:* serap.akfirat@deu.edu.tr (S. Akfırat).

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thus weaken the struggle against the pandemic.

These findings and observations imply that, in addition to effective leadership, presenting social norms in a way that encourages healthy behaviors might be essential for ensuring that individuals follow the advice of health communicators. In this regard, examining how social norms and leadership can be used to maximize adherence to COVID-19 prevention policies is essential. A high-powered experiment using a non-WEIRD sample (i.e., Turkey) aimed to investigate how the supportive and obstructive types of descriptive and injunctive norms affect adherence to preventive measures, the intention to be vaccinated, and pro-social behavior against COVID-19. In addition, we examine the effects of a leader's entrepreneurship characteristics on these outcomes. Therefore, by examining the interactions between different social norm types (descriptive and injunctive norms), their valence (being supportive and obstructive), and leader characteristics (identity entrepreneurship), we aim to contribute to identifying the psychological factors in effective health communication strategy that can be used in the field of practice.

## 1. The roles of the leaders in health communication

In crises that bring uncertainty and threats, people seek guidance from their leaders (Abrams et al., 2021). Pandemics are highly stressful events in which individuals must confront uncertain and ambiguous situations (Mak et al., 2009). In the context of COVID-19, which has not only been a long-lasting threat to health but has also emerged as a broader-ranging challenge, triggering political and economic crises (Borio, 2020), individuals feel uncertain and stressed (Flesia et al., 2020). In such a context, individuals usually direct their attention toward the suggestions and instructions of their leaders to reduce the impact of these negativities (Abrams et al., 2021; Muldoon et al., 2021).

Recent studies showed that the guidance of leaders is highly effective against COVID-19. For example, Grossman et al. (2020) examined country-level mobile activity data, including 545 million unique devices that reflect social distancing in counties of the US, following governors' calls for compliance with the preventive measures. They found that governors' recommendations led to a significant reduction in mobility in counties. Leaders' influence in persuading the public to follow preventive measures is not confined to politicians or political figures. Religious leaders can also convince those with the same social identity (i.e., a religious community) to take preventive actions, regardless of whether or not their message contains religious arguments (Vyborny, 2021).

Leaders sometimes negatively affect public health through misguidance that directs individuals towards risky behaviors. For example, after Jair Bolsonaro, the President of Brazil, explicitly denied the risks of COVID-19 and rejected the policy of isolation, the degree of compliance with the social distancing rule decreased more in regions with higher support for the government compared to those with lower support (Ajzenman et al., 2020). Likewise, following the press conference of Andres Manuel Lopez Obrador, the Mexican President, in which he downplayed the severity of the pandemic, in pro-government municipalities, there was an increase in the geographic mobility of individuals, thus violating the social distancing measure (Ayala-Cantu et al., 2021). In the US, health communication styles also diverged sharply along partisan lines of leaders, and the individuals' levels of compliance with preventive measures differed in line with the endorsed leader. Donald Trump, as a Republican leader, used rhetoric that downplayed the risk of the pandemic, while Democratic leaders put much more emphasis on the dangers (e.g., Summers, 2020). Concordantly, several studies showed a remarkable difference between republican and democrat voters in adherence to the measures; Democrats, like their leaders, took the pandemic more seriously and took more precautions (e.g., Kerr et al., 2021).

Leadership is a mutual influence process between leaders and followers who are members of the same social group, as suggested by the New Psychology of Leadership (NPoL; Haslam et al., 2011). Haslam et al. (2011) provided a framework highlighting the psychological features that make a leader more effective. They proposed the Identity Leadership Model (ILM) to outline the four key aspects of leadership: Prototypicality, advancement, impresarioship, and entrepreneurship. Accordingly, prototypicality refers to the notion that leaders are seen as representative members of the ingroup (i.e., one of us) and as role models for ingroup members (Turner and Haslam, 2001). Identity advancement is defined as a leader's capacity to advance not personal interests but ingroup interests and goals by enhancing the ingroup prestige (Haslam et al., 2011). Identity impresarioship means the leader's ability to create events and structures for group members to engage in group-related practices that contribute to the smooth operation of the group and provide collective experiences that embed a sense of belonging to social identity (Steffens et al., 2014). Lastly, entrepreneurship refers to a leader's capacity to create a shared sense of "we" and improve cohesion that allows ingroup members to feel that they are part of the same group and understand the meaning of the difference between "us" and "them" (Steffens et al., 2014).

Although all the dimensions of ILM might be closely related to effective leadership, identity entrepreneurship may be especially relevant during the pandemic, as it has the potential to reduce uncertainty and restore the personal sense of control. Entrepreneurship refers to the leadership's ability to shape and clarify members' understanding of what the ingroup represents rather than its role in defining and shaping ingroup stereotypes, norms, values, and ideals. Therefore, leaders who are perceived as identity entrepreneurs may be more successful in guiding how group members should behave in the pandemic context. Research implies that people need leaders who offer appropriate behavior models or define norms for how they should behave in a time of uncertainty (see Abrams et al., 2021). Studies also showed that leaders who can craft an understanding of the group (i.e., who we are) become preeminent among the members (e.g., Steffens et al., 2014). Therefore, a leader's ability to provide an understanding of "who we are" and "what we should do" might be crucial in the context of COVID-19. Redefining ingroup boundaries and shaping understandings of ingroup norms, values, and ideals can lead the way in this new ambiguous context. Thus, we assume that identity entrepreneurs would become effective leaders directing people to comply with preventive measures.

## 2. Descriptive and injunctive norms in health communication

Social norms provide frames of reference for making judgments about ambiguous stimuli and thus shape behavior (Sherif, 1936). Since people in the current era have never experienced a context like COVID-19, and its uncertain multidimensional consequences, social norms may have reached an even more critical reference point in the process of making judgments and acting. Therefore, focusing on how social norms affect behaviors during the pandemic may contribute to the construction of effective health communication, increasing compliance with preventive measures.

Social psychology has various norm conceptualizations; each can be quite different from the other. For example, the Theory of Planned Behavior (TPB) defines subjective norms, which represent the perceptions of how significant others (e.g., parents, spouse, friends) approve or not approve of engaging in a particular behavior (Ajzen, 1991). Subjective norms have an impact on health-related behaviors as well. In the case of the COVID-19 pandemic, for example, it was found that subjective norms predicted vaccination intentions positively (Wolff, 2021).

On the other hand, The Focus Theory of Normative Conduct distinguishes between descriptive and injunctive norms (Cialdini et al., 1990). While descriptive norms specify the most common and expected behaviors to be performed in particular situations, injunctive norms refer to which behaviors are acceptable or nonacceptable, approved or disapproved in a social group. Therefore, injunctive norms are related to social approval, and descriptive norms to belongingness or affiliation needs (Cialdini and Goldstein, 2004). Descriptive norms reflect the number of people who, as a rule, do or do not engage in the target

behavior. On the other hand, Injunctive norms are concerned with their approval or disapproval of the target behavior. But at this point, we need to underline that injunctive norms do not correspond to the concept of the subjective norm in TPB, in the sense that injunctive norms are not limited to one's significant others' approval or disapproval.

On the other side, the Social Identity Approach to norms, on which our study is also based, proposes that when specific group memberships become salient, individuals conform to the context-specific ingroup norms based on what they perceive as the prototypical ingroup beliefs, attitudes, feelings, and behaviors (Turner, 1991; Smith and Louis, 2009). These group norms can be either descriptive or injunctive. In other words, group norms are the prototypical features of the group that prescribe the appropriate attitudes and actions for group members, including descriptive and injunctive properties (Neville et al., 2021). Regarding this point, White et al. (2002) found that participants tended to act in accordance with their own attitude when this attitude is commonly held by the other ingroup members (i.e., when the descriptive norm is consistent with their attitude). Correspondingly, Terry et al. (2000) found that individuals tend to act less in accordance with their attitude when the injunctive norm is inconsistent with the attitude. Studies in the context of health behaviors have supported the assumptions of this approach (for example, see Falomir-Pichastor et al., 2009 for flu vaccination). Sheeran and Webb (2016) reported that a meta--analysis's results showed experimentally induced norms changes were associated with changes in intentions and behavior. Their findings also suggested that a change in norms was sufficient to change behavior, even without changes in personal attitudes and self-efficacy. Another meta-analysis on health behaviors indicated that descriptive norms had a greater impact on behavior than injunctive norms, especially when the behaviors were not socially approved, more socially motivated, and more pleasant (Manning, 2009).

Bonan et al. (2020) found that consistency between descriptive and injunctive norms boosts the effectiveness of social information. The results suggest that what is critical is not the superiority of one type over the other but the consistency between different normative message types. It was also shown that simultaneous activation of the two types of norms is most effective in bringing behavioral change. However, there is mixed experimental evidence on the impact of the interaction between descriptive and injunctive norms if opposed (Meisel and Goodie, 2014). That is, when incompatible descriptive and injunctive norms work simultaneously in a given situation, it becomes difficult to predict the individuals' behavior (Cialdini and Trost, 1998). Considering the particular context of COVID-19, this often came to the fore, especially in the health communication messages of various authorities. For example, leaders frequently highlighted that the people did not sufficiently comply with the preventive measures and violated hygiene or social distance rules. University students were accused of attending hall events, parties, and gatherings, ignoring social distancing rules (Good et al., 2020). In a similar vein, mainstream and social media have published news or charts indicating the prevalence of vaccine reluctance, implying that resistance is a pervasive norm (Kish, 2021). In other words, the political and local leaders themselves emphasized that the descriptive norm points to the relative frequency of non-compliance with the precautions, yet the same leaders simultaneously presented a picture of consensus on the necessity and importance of compliance. Although these messages emphasized the seriousness of the situation, they also highlighted the presence of two opposing norms in society. Since common behavior becomes a moral reference, people may even display increased misbehaviors when observing others' inappropriate behaviors (Ryoo and Kim, 2021).

In an experiment across nine countries, Bicchieri et al. (2021) presented participants with vignettes about a hypothetical country affected by COVID-19 where empirical and normative expectations about preventive measures vary (i.e., what others do and what others approve of). They asked participants to estimate the level of compliance with preventive measures of the vignette characters and found that participants estimated the highest compliance when both expectations were congruently positive. However, estimates of compliance levels decreased if one norm type was opposed to the other. In other words, preventive measures are most adhered to when both types of social norms are consistently positive. However, comparisons between incongruent conditions provided mixed and nonsystematic results (Bicchieri et al., 2021).

Thus, previous studies provide no consistent or robust evidence in determining which type of norm (i.e., descriptive or injunctive) is more effective on behaviors in the case of a discrepancy between them in particular conditions (e.g., pandemics and societal crises). Regarding the COVID-19 context, even strong descriptive norms might have limited effects on vaccine tendency (Sinclair and Agerström, 2021). Thus, it is important to study the role of the interaction between the different types of norms and leadership. Examining the possible interaction may contribute to identifying the factors that increase the effectiveness of health communication aimed at protecting public health. In addition, the existing literature is mainly based on survey data, which makes it difficult to draw clearly defined inferences that can serve as a guide in the field. Therefore, there is a need for strong experiments that examine both the effects of incongruency in different types of norms and the role of the leader in this process.

## 3. The current study

The success in controlling the pandemic within a country, and in turn across the world, appears to depend on a variety of social identity-related factors (Akfirat et al., 2022; Van Bavel et al., 2022). For example, Akfirat et al. showed that national identification positively predicted acceptance of national vaccines and negatively predicted acceptance of Western vaccines; people's evaluations of their leaders also mediated both relationships. As the research findings imply, leadership and the social norms guiding group functioning and members' behaviors emerged as critical factors in the pandemic. In the current experimental study, we examined the roles of identity entrepreneurship of a national leader and descriptive and injunctive norms on compliance with COVID-19 preventive measures. In general, we expected that both descriptive and injunctive types of social norms and their interactions would positively affect adherence to preventive measures if the two types of norms support preventive measures and are not in conflict. We also examined which type of norms would be more effective in promoting preventive behaviors when in conflict (i.e., descriptive norms support anti-preventive behaviors, whereas injunctive norms disapprove of such behaviors and vice versa). In addition, we investigated the role of the leader (i.e., leader's entrepreneurship) as the source of the health messages. We consider entrepreneurship as an essential leadership quality in the struggle against the pandemic because the uncertainty and the crisis brought by the pandemic get confused about what to do and how to behave. Therefore, we assumed that entrepreneur leaders who can convey that the group has the required characteristics to overcome the situation would successfully induce people to comply with the COVID-19 preventive measures.

Our research is based on a scenario experiment, which has been widely used in social psychology, particularly in group processes and leadership studies (see Giessner and van Knippenberg, 2008; Jetten et al., 2015; West et al., 2011). We employed a high-powered scenario experiment to examine the role of leaders as well as the main effects of different norm types (i.e., descriptive and injunctive) that encourage or hinder adherence to preventative measures and their interaction effects (i.e., congruency). We conducted an experiment with 2 (presence/lack of entrepreneurship of the leader) X 2 (supportive/obstructive descriptive norm) X 2 (supportive/obstructive injunctive norm) between-subject factorial design on the three dependent outcomes (i.e., compliance with preventive measures, vaccination intention, and prosocial behavior against COVID-19).

## 4. Method

The anonymized raw data is publicly available at https://osf.io/szvh2/

### 4.1. Participants

According to power analysis in G*Power software (Faul et al., 2009), assuming a small effect size ($d = 0.20$, $f = 0.10$) and taking a two-tailed alpha as .05 with power at .95, we calculated that we needed a minimum of 1047 participants to detect an effect. We recruited undergraduate students from four universities who agreed to participate in exchange for a gift draw and course credits. We shared participation links with students through Qualtrics, an online data collection platform. Since all measures are forced, and any data cleaning method may violate the randomization of the experimental design, we included all participants who completed the study in the analysis. At the end of the data collection process, we reached 1057 participants (74% female) aged 18 to 59 with a mean of 22.1 ($SD$ = 5.02). As the respective population, the sample socio-economical levels seem normally distributed. More than half of the participants (62.1%) described themselves as left-oriented (Scale range between 0 = *Extreme leftist*, 10 = *Extreme rightist*).

## 5. Procedure

Before the experiment, ethical approval was obtained by the Ethics Committee of the Dokuz Eylul University in Turkey. The study included the participants through the link generated on Qualtrics between 2020 and 11–18 and 2020-11-24 when there was uncertainty over the appropriate treatment and the vaccines were yet to be developed. Participants were randomly assigned to the experimental conditions, which were formed through manipulation of the norm type (descriptive and injunctive), norm content (supportive or obstructive), and leadership (presence/lack of entrepreneurship).

We presented an imaginary scenario to the participants for manipulation purposes. We decided to locate the context of COVID-19 within a country outside Turkey, considering that participants' political and ideological attitudes may affect social norms and leadership traits expected to predict health precautions during the fight against COVID-19. We aimed to ensure that the country chosen as the context has no positive or negative history with Turkey and that little information about the country's political leader is available. Based on these criteria, the Republic of Cameroon was chosen for the experiment's framework, and Lejeune Mbella Mbella, (foreign minister) was presented as its head of state. Although at the time we collected the data, Cameroon's president was Paul Biya, and its prime minister was Joseph Ngute, we preferred neither of them as the political leader to be manipulated in our experiment because their first names had the possibility of reminding participants of Western countries. The names were Christian-originated and common in Western countries. Lejeune Mbella Mbella was not the real head of state, yet he was a real Cameroonian politician (foreign minister). Therefore, we decided to present him as the national political leader in our scenarios because the phonetic pronunciation of Lejeune Mbella Mbella sounded authentic, and the name was not familiar to Turkish respondents. The rest of the information was fabricated to manipulate the descriptive and injunctive norms and the leader's entrepreneurship quality. All six authors evaluated and discussed the contents of the vignettes to determine whether the norms and leadership manipulations correspond to the theoretical conceptualizations and relevant measures. At the end of the discussion sessions, we agreed that the scenarios fit the theoretical concepts.

Before starting the experimental procedure, all participants read the following identical instruction, regardless of their assigned conditions:

> As known, COVID-19 (coronavirus disease) continues tospread worldwide. Cameroon, located in the Midwest of Africa, is also one of the countries where the pandemic has been spreading exponentially. Lejeuna Mblella Mbella, who is the current President of Cameroon, at every possible opportunity, appeals to the people of Cameroon to take protective measures against COVID-19.

The rest of the text differed according to the conditions of independent variables, and participants were required to confirm that they read and understood the text.

### 5.1. Descriptive norm manipulation

We manipulated descriptive norms by highlighting either their supportive or obstructive aspects. *Supportive descriptive norms* were defined as the behaviors commonly exhibited in society, and *obstructive descriptive norms*, as behaviors commonly non-exhibited in society. For instance, the common use of masks during the COVID-19 pandemic is a supportive descriptive norm, while the widespread absence of masks is an obstructive descriptive norm. We manipulated descriptive norms as being supportive or obstructive norms regarding the COVID-19 pandemic as follows:

Supportive Descriptive Norm: *Scientific research on the COVID-19 (coronavirus disease) pandemic in Cameroon revealed that the GREAT MAJORITY of Cameroonian society takes preventive measures against COVID-19 (coronavirus) seriously and complies with the preventive rules such as social distancing and being hygienic.*

Obstructive Descriptive Norm: *Scientific research on COVID-19 (coronavirus disease) pandemic in Cameroon revealed that a GREAT MAJORITY of Cameroon society DO NOT take preventative measures against COVID-19 (coronavirus) seriously, and the rate of complying with preventive rules, such as social distancing and being hygienic, is VERY LOW.*

### 5.2. Injunctive norm manipulation

As in descriptive norm manipulation, we manipulated injunctive norms by presenting either supportive or obstructive aspects. *Supportive injunctive norms* refer to the behaviors approved and recommended by society and emphasize that punishment is required when these have not complied. On the other hand, obstructive injunctive norms are defined as behaviors approved by society, but in this case, non-compliance is not considered to be socially or legally punishable. That is, obstructive injunctive norms are those behaviors for which non-compliance is tolerated. For example, being friendly is a socially approved behavior, but its lack does not require active disapproval or legal sanctions. Within this scope, we manipulated supportive and obstructive injunctive norms as follows:

Supportive Injunctive Norms: *Research also shows that Cameroonians DO NOT tolerate those who do not comply with the rules fighting against COVID-19 (coronavirus), and they also warn each other to obey these rules. In addition, Cameroonians think that people who do not comply with the rules fighting against COVID-19 (coronavirus) should have sanctions imposed on them.*

Obstructive Injunctive Norms: *Research also shows that Cameroonians are INDIFFERENT towards those who do not comply with the rules for fighting against COVID-19 (coronavirus). In addition, Cameroonians think that people who do not obey the rules for fighting against COVID-19 (coronavirus) should not have sanctions imposed on them.*

### 5.3. Leaders' entrepreneurship

We manipulated the identity entrepreneurship quality of the national political leader, who was in a position to direct people to comply with the preventive measures against COVID-19. We created two conditions regarding identity entrepreneurship manipulation, portraying the leader either as having entrepreneurship qualities or presenting no information about the leadership characteristics, as below:

In his speeches, President Mbella, emphasizes Cameroonians as

responsible, self-sacrificing, and resilient against difficulties, creating a sense of unity and integrity in the country. He also states that he believes the country will overcome the pandemic in a much shorter time than other countries because Cameroon people have these particular values and distinctive characteristics.

In the control condition, we provided no information on leadership characteristics in terms of identity entrepreneurship.

## 6. Measures

### 6.1. Manipulation check

We asked three questions to check the manipulations (for descriptive norm: *Most Cameroonians take the measures in the fight against COVID-19 seriously and comply with the rules of social distance and hygiene*; for injunctive norm: *Most Cameroonians think that sanctions should be imposed on those who do not comply with the rules against COVID-19*; and for identity entrepreneurship: *The President of Cameroon, Lejeune Mbella Mbella creates a sense of unity and integrity in the country by emphasizing the values and characteristics of the Cameroonian people in the period of combat against COVID-19*). All three items were Likert type with 5 points (1 = *Strongly disagree,* 5 = *Strongly agree*).

### 6.2. Preventive measures

We required the participants to answer the dependent measures from the point of view of Cameroonians. We explicitly instructed them to put themselves in the position of Cameroonians when answering the questions. We generated nine items to measure compliance with the preventive measures related to hygiene and physical distancing (e.g., *If I were a Cameroonian, I would maintain physical distance from others*). Participants answered the items on a slider from 0 (*definitely I would not*) to 100 (*definitely I would*). The results of exploratory factor analysis showed that the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was 0.934, and Bartlett's Test of Sphericity was statistically significant ($p < .001$) level, meaning that the scale was deemed suitable for factor analysis. Thus, principal component analysis results with varimax rotation yielded a single factor with an Eigenvalue of 6.99, accounting for 77.73% of the variance. Cronbach's alpha for the scale was 0.96.

### 6.3. Intention to be vaccinated

We used a single-item measure of vaccine intention (*If a vaccine was developed, I, as a Cameroonian, …*) using a 5-Point Likert scale (1 = *definitely would not get vaccinated*, 5 = *definitely would get vaccinated*).

### 6.4. Prosociality

We measured prosocial behavioral tendencies using a single item. Participants were asked to imagine themselves as Cameroonian and indicated how much they would be prepared to donate to a foundation fighting against COVID-19 if they had 100 units of money. A higher value of the donation is considered to indicate a greater tendency for prosocial behavior.

We used the same measures for all conditions.

## 7. Results

### 7.1. Manipulation check

To test the effectiveness of the manipulations, we conducted three different independent t-tests. According to the results, regarding the leader's entrepreneurship, experimental group participants ($M = 5.15$, $SD = 1.20$) perceived the leader as significantly more entrepreneurial than control group participants ($M = 3.75$, $SD = 1.61$), $t(1055) = 15.98$, $p < .001$, Cohen's $d = 0.98$, which indicates identity entrepreneurship manipulation was effective. Similarly, participants in the supportive descriptive norm condition ($M = 4.84$, $SD = 1.52$) perceived the rate of the Cameroonians' complying with the preventive rules is significantly higher than those in the obstructive descriptive norm condition ($M = 2.17$, $SD = 1.48$), $t(1055) = 28.90$, $p < .001$, Cohen's $d = 1.78$. This result also shows the success of supportive descriptive norm manipulation. Lastly, participants in the positive injunctive norm condition ($M = 4.83$, $SD = 1.38$) perceived the rate of Cameroonians demanding sanctions against those who violated the COVID-19 preventive measures as significantly higher than those in the negative injunctive norm condition ($M = 2.17$, $SD = 1.55$), $t(1055) = 29.43$, $p < .001$, Cohen's $d = 1.81$. Therefore, we concluded that our manipulations were effective.

### 7.2. Main analyses

We conducted a three-way multivariate analysis of variance (MANOVA) to examine the effects of a leader's entrepreneurship, supportive and obstructive forms of the descriptive norm and injunctive norm, and their interactions on the combination of outcomes. Results indicated a significant main effect of the descriptive norm, Wilks' Lambda = .883, $F(3, 1047) = 46.249$, $p < .001$, $\eta_p^2 = 0.12$, a significant main effect of the injunctive norm, Wilks' Lambda = 0.966, $F(3,1047) = 12.430$, $p < .001$, $\eta_p^2 = 0.03$, but no significant main effect of identity entrepreneurship, Wilks' Lambda = 0.996, $F(3,1047) = 1.319$, $p = .267$. A significant interaction emerged between descriptive norm and injunctive norm, Wilks' Lambda = 0.988, $F(3,1047) = 4.226$, $p = .006$, partial $\eta 2 = 0.01$. A series of follow-up univariate analyses of variance (ANOVAs) for each dependent variable were conducted to examine multivariate analyses results.

### 7.3. Compliance with preventive measures

There was a significant main effect of the descriptive norm on compliance with preventive measures, $F(1, 1049) = 127.11$, $p < .001$, $\eta_p^2 = 0.108$. Accordingly, compliance with preventive measures was significantly higher for the supportive descriptive norm condition than for the obstructive descriptive norm condition ($M_{difference} = 17.3$, $SE = 1.53$, $p_{bonferroni} < .001$, $d = 0.693$). In a similar vein, there was a significant main effect of the injunctive norm, $F(1, 1049) = 33.54$, $p < .001$, $\eta_p^2 = 0.031$. In the supportive injunctive norm condition, intention for compliance with preventive measures was significantly higher than in the obstructive injunctive norm condition ($M_{difference} = 8.87$, $SE = 1.53$, $p_{bonferroni} < .001$, $d = 0.357$).

There was also a significant interaction between descriptive and injunctive norm, $F(1, 1049) = 4.58$, $p = .040$, $\eta_p^2 = 0.004$. Specifically, when the two types of norms were congruently supportive, there was the highest level of compliance with preventive measures ($M = 88.4$, $SE = 1.53$), and this condition indicated greater compliance with preventive measures than the condition in which both norms are obstructive ($M_{difference} = -26.26$, $SE = 2.17$, $p_{bonferroni} < .001$, $d = -1.053$). The next strongest compliance with measures was found in the condition where the descriptive norm is supportive ($M = 82.7$, $SE = 1.53$), and higher compliance was indicated than for the condition of both norms being obstructive ($M_{difference} = -20.58$, $SE = 2.17$, $p_{bonferroni} < .001$, $d = -0.825$). In the case where all norms were incongruent, the condition in which the descriptive norm was supportive and the injunctive norm obstructive was found more effective than the reverse condition ($M_{difference} = 8.33$ $SE = 2.17$, $p_{bonferroni} < .001$, $d = -0.334$). All other results are displayed in Table 1, and interaction is depicted in Fig. 1.

There was also a significant interaction between the leader's entrepreneurship and descriptive norm, $F(1, 1049) = 6.67$, $p = .010$, $\eta_p^2 = 0.006$. When there was an entrepreneur leader, and the descriptive norm was supportive, participants indicated the highest compliance with preventive measures ($M = 86.7$, $SE = 1.55$), and this condition resulted in higher compliance than the condition in which the descriptive norm was obstructive, and leader's entrepreneurship was lacking (i.e., control

**Table 1**
Post hoc comparisons for interaction between injunctive and descriptive norms on compliance with preventive measures.

| Comparison | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Injunctive | Descriptive | Injunctive | Descriptive | $M_{difference}$ | *SE* | df | *t* | *p* | *d* |
| Obstruct | Obstruct | Obstruct | Support | −20.58 | 2.17 | 1053 | −9.49 | <.001 | −.825 |
| Obstruct | Obstruct | Support | Obstruct | −12.25 | 2.18 | 1053 | −5.63 | <.001 | −.491 |
| Obstruct | Obstruct | Support | Support | −26.26 | 2.17 | 1053 | −12.11 | <.001 | −1.053 |
| Obstruct | Support | Support | Obstruct | 8.33 | 2.17 | 1053 | 3.84 | <.001 | −.334 |
| Obstruct | Support | Support | Support | −5.68 | 2.16 | 1053 | −2.63 | .052 | −.228 |
| Support | Obstruct | Support | Support | −14.01 | 2.17 | 1053 | −6.46 | <.001 | −.562 |

*Note.* Comparisons are based on estimated marginal means. *p* values are based on Bonferroni correction. The effect size of *d* indicates Cohen's *d*.

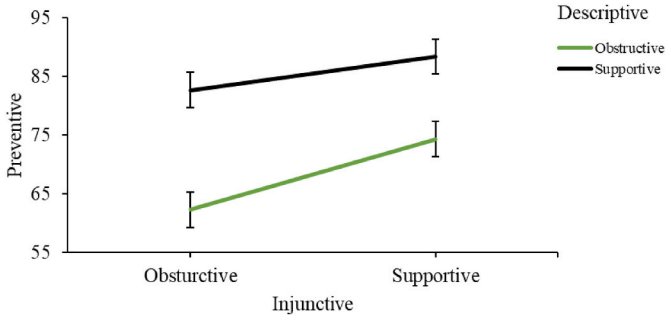


**Fig. 1.** Marginal means plot for interaction between injunctive and descriptive norms on compliance with preventive measures.

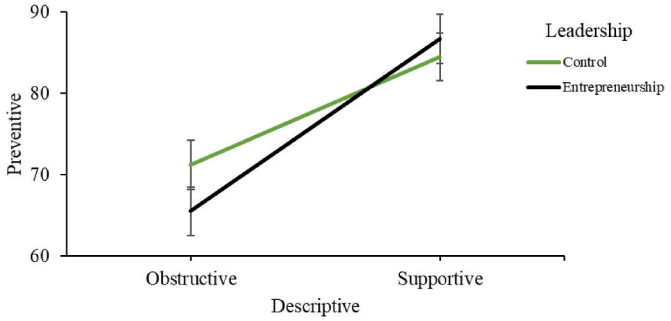


**Fig. 2.** Marginal Means Plot for Interaction between Descriptive Norms and leader's entrepreneurship on Compliance with Preventive Measures.

condition), $M_{difference} = -15.51$ $SE = 2.19$, $p_{\text{bonferroni}} < .001$, $d = -0.623$. All other interactions are presented in Table 2 and depicted in Fig. 2.

### 7.4. Vaccine intention

For the vaccine intention, a significant main effect emerged for both the descriptive norm, $F(1, 1049) = 44.31$, $p < .001$, $\eta_p^2 = 0.041$, and the injunctive norm, $F(1, 1049) = 10.56$, $p < .001$, $\eta_p^2 = 0.010$. Participants in the supportive descriptive norm condition had significantly higher vaccine intention than those in the obstructive descriptive norm condition ($M_{difference} = -0.438$, $SE = 0.066$, $p_{bonferroni} < .001$, $d = -0.410$). Similarly, the supportive injunctive norm condition had higher vaccine intention than the obstructive injunctive norm group ($M_{difference} = -0.214$, $SE = 0.066$, $p_{bonferroni} < .001$, $d = -0.200$). There was no significant interaction between conditions. All univariate tests can be seen in Table 3.

### 7.5. Prosociality

Regarding prosociality, there was a significant main effect of the descriptive norm, $F(1, 1049) = 31.06$, $p < .001$, $\eta_p^2 = 0.029$, and a significant main effect of the injunctive norm, $F(1, 1049) = 9.79$, $p = .002$, $\eta_p^2 = 0.009$ on intention to donate to the foundation fighting against COVID-19. Participants in the supportive descriptive norm condition showed significantly higher intention to donate than participants in the obstructive descriptive norm condition ($M_{difference} = -8.80$, $SE = 1.58$, $p_{bonferroni} < .001$, $d = -0.343$). Similarly, participants in the positive injunctive norm condition showed significantly higher intention to donate than participants in the negative, injunctive norm condition ($M_{difference} = -4.94$, $SE = 1.58$, $p_{bonferroni} = .002$, $d = -0.193$). There was no significant interaction, and all univariate tests are presented in Table 4.

**Table 3**
Anova results for vaccine intention.

| | Sum of Squares | df | Mean Square | *F* | *p* | $\eta^2$p |
|---|---|---|---|---|---|---|
| Overall model | 65.1953 | 7 | 9.3136 | 8.2303 | <.001 | |
| Injunctive | 12.0883 | 1 | 12.0883 | 10.5643 | <.001 | .010 |
| Descriptive | 50.7027 | 1 | 50.7027 | 44.3108 | <.001 | .041 |
| Leadership | 0.1132 | 1 | 0.1132 | 0.0990 | .753 | .000 |
| Injunctive ✻ Descriptive | 0.0689 | 1 | 0.0689 | 0.0602 | .806 | .000 |
| Injunctive ✻ Leadership | 0.4733 | 1 | 0.4733 | 0.4137 | .520 | .000 |
| Descriptive ✻ Leadership | 1.1473 | 1 | 1.1473 | 1.0027 | .317 | .001 |
| Injunctive ✻ Descriptive ✻ Leadership | 0.6015 | 1 | 0.6015 | 0.5257 | .469 | .001 |
| Residuals | 1200.3215 | 1049 | 1.1443 | | | |

**Table 2**
Post hoc comparisons for interaction between descriptive norms and Leader's entrepreneurship on compliance with preventive measures.

| Comparison | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Descriptive | Leadership | Descriptive | Leadership | $M_{difference}$ | *SE* | df | *t* | *p* | *d* |
| Obstruct | Control | Obstruct | Entrepreneur | 5.71 | 2.17 | 1049 | 2.63 | .053 | −.229 |
| Obstruct | Control | Support | Control | −13.30 | 2.16 | 1049 | −6.16 | <.001 | −.534 |
| Obstruct | Control | Support | Entrepreneur | −15.51 | 2.19 | 1049 | −7.08 | <.001 | −.623 |
| Obstruct | Entrepreneur | Support | Control | −19.01 | 2.14 | 1049 | −8.87 | <.001 | −.764 |
| Obstruct | Entrepreneur | Support | Entrepreneur | −21.2 | 2.18 | 1049 | −9.75 | <.001 | −.853 |
| Support | Control | Support | Entrepreneur | −2.21 | 2.16 | 1049 | −1.02 | 1.000 | −.089 |

*Note.* Comparisons are based on estimated marginal means. *p* values are based on Bonferroni correction. The effect size of *d* indicates Cohen's *d*.

**Table 4**
ANOVA results for prosociality.

| | Sum of Squares | df | Mean Square | *F* | *p* | $\eta^2$p |
|---|---|---|---|---|---|---|
| Overall model | 32,073.4 | 7 | 4581.9 | 7.0356 | <.001 | |
| Injunctive | 6444.4 | 1 | 6444.4 | 9.7963 | .002 | .009 |
| Descriptive | 20,433.3 | 1 | 20,433.3 | 31.0611 | <.001 | .029 |
| Leadership | 875.4 | 1 | 875.4 | 1.3307 | .249 | .001 |
| Injunctive ✻ Descriptive | 2425.2 | 1 | 2425.2 | 3.6866 | .055 | .004 |
| Injunctive ✻ Leadership | 53.4 | 1 | 53.4 | 0.0812 | .776 | .000 |
| Descriptive ✻ Leadership | 18.2 | 1 | 18.2 | 0.0276 | .868 | .000 |
| Injunctive ✻ Descriptive ✻ Leadership | 1823.5 | 1 | 1823.5 | 2.7720 | .096 | .003 |
| Residuals | 690,077.1 | 1049 | 657.8 | | | |

## 8. Discussion

In the present study, we focused on the roles of social norms and leadership in complying with the calls for preventive measures regarding health communication. Specifically, we aimed to examine the effects of descriptive/injunctive types of social norms and the leader's entrepreneurship characteristics on adherence to COVID-19 preventive measures. We also investigated the effects of conditions in which there was a conflict between the two types of norms (one supportive and the other obstructive) and their interaction with a leader's entrepreneurship. In a high-powered experiment, we found that supportive forms of descriptive and injunctive norms positively predicted compliance with preventive measures, vaccine intention, and prosocial tendencies against COVID-19. The results also showed an interaction between descriptive and injunctive norms, indicating the highest intention to comply with preventive measures occurred when there was consistency, i.e., both types of norms supported compliance with preventive measures. In addition, when the norms were incongruent, the obstructive injunctive and supportive descriptive norm conditions produced results indicating greater compliance than the supportive and descriptive norm conditions. In other words, if there is a conflict, the descriptive norm in opposition to the adherence to measures creates greater obstacles in terms of health communication aimed at individuals' compliance. As for leadership, results did not indicate any significant main effect for the leader's entrepreneurship, but there was a significant interaction between a leader's entrepreneurship and the descriptive norm, indicating that compliance results in the highest scores when the descriptive norms are supportive, and the leader emphasizing the ingroup has the required characteristics.

The current findings can potentially contribute to the existing literature in various respects. To begin with, the current study provides a comprehensive perspective on the power of injunctive and descriptive norms. Descriptive norms were found as more effective than injunctive norms regarding compliance with COVID-19 preventive measures. Descriptive norms accentuate the behaviors of the majority and reinforce the idea that "this behavior is right" (Cialdini and Trost, 1998). Since a pandemic involves intense uncertainty and creates the need for guidance, it is appropriate to determine one's course of action heuristically by observing the behavior of those around (Jacobson et al., 2011). Previous studies also supported this viewpoint and showed that descriptive norms reduce uncertainty (Gelfand and Harrington, 2015) and are especially functional in unfamiliar and ambiguous contexts (e.g., Köbis et al., 2015). Concerning the effects of norm valence, we found that when individuals were exposed to supportive descriptive and injunctive norms rather than obstructive norms, they were more likely to comply with COVID-19 preventive measures. A study based on evolutionary predisposition by Bergquist and Nilsson (2019) showed that obstructive descriptive norms exerted a stronger influence over people than supportive descriptive norms. That is, participants were influenced more by behaviors avoided by others than by behaviors performed by others. Our findings support that individuals are more likely to adopt preventive behaviors when exposed to what the majority generally does rather than does not.

To our knowledge, the present study is the first high-powered experiment that examines how the effects of descriptive and injunctive norms differ when they are incongruent in health communication. The extant literature indicated mixed results when there is a conflict between descriptive and injunctive norms. However, there seems to be inadequate research on the complexity of social norms and the effects of this complexity. The interaction between the descriptive and injunctive norms, especially when conflicting, appears as neglected in previous literature (Smith and Louis, 2009). We found that the intention to comply with COVID-19 preventive measures in the condition the descriptive norm supports, but the injunctive norm obstructs preventive measures is higher than in the reverse condition. This finding is consistent with previous accounts that when a situation is ambiguous, people seek proper behaviors in their environment (Festinger, 1954) and tend to take action preferred by a large majority (Crott et al., 1991). According to Caporael (1997), the concept of "repeat assembly" operates at many levels in human evolution, not just in terms of genes. That is, characteristics or behaviors that are "repeated" by a number of individuals and groups promote the adaptiveness of group life and increase survival chances.

On the other hand, the interaction between descriptive and injunctive norms was not significant in either vaccine intention or prosocial tendency. This difference may stem from the dependent variables related to the contemporary context and personal/collective outcomes. That is, at the time of this study, widespread vaccination had not yet begun, and vaccine development and approval were in progress. In other words, the social norm did not have time to produce severe effects on an issue that had yet to materialize fully. In addition, vaccination intention may be strengthened more by emphasizing individual risk rather than social benefits. Social norms include group-level aspects in terms of their content, and in the norm manipulations, this study did not emphasize the individual health risk in the necessity of complying with the precautions. Some preliminary findings also implied that emphasizing individual health risks is more effective in increasing vaccination rates (e.g., Isler et al., 2020; Heffner et al., 2021). As for a prosocial tendency, this variable prioritizes social interests rather than individual gains compared to other positive behaviors against COVID-19. Zou and Savani (2019) indicated that people are prone to credit descriptive norms for their own risk-taking but recommend others act in parallel with injunctive norms. Decision-making studies emphasize that real behavioral measures of prosociality (i.e., incentivized games including real decisions with real money) can provide more accurate results (Sheeran and Webb, 2016) and that different cognitive biases affect responses to the two measures (Little et al., 2012). Therefore, we encourage future studies to use real behavioral measures when examining prosocial behaviors.

Another crucial finding of the current study is a significant interaction between the leader's entrepreneurship and the supportive descriptive norm, indicating that compliance with preventive measures resulted in the highest scores. Such a finding in the COVID-19 context was unsurprising regarding the notion that a leader's identity entrepreneurship characteristic is likely to meet uncertainty reduction needs and might function to restore people's sense of control by shaping and clarifying their understanding of ingroup stereotypes, norms, values, and ideals (e.g., Abrams et al., 2021). Besides, people might consider a leader successful and effective because, in this experimental condition, the majority were presented as complying with the preventive measures as demanded. From this point, the reason for the non-significant interaction between obstructive conditions becomes clearer. That is, the participants might have perceived the leader's identity entrepreneurship effort to be ineffective had they not observed that most followed

their leader's call.

We did not find a significant main effect of a leader's entrepreneurship on outcomes. There may be two factors underlying this result: leadership process and health context. Firstly, we considered only the entrepreneurship dimension of the ILM, which deals with the leadership processes as a whole, in terms of four different but interrelated leadership qualities. Employing dimensions of ILM other than entrepreneurship might be more effective in guiding people to healthy behavior. Group members evaluate leaders on multiple aspects; therefore, examining leadership dimensions by considering their interaction may provide a more comprehensive perspective (Steffens et al., 2014) rather than relying on a single dimension. On the other hand, the level of ingroup identification might have considerable effects on evaluating the leader and compliance with the leader's guidance (Chrobot-Mason et al., 2016). These notions might also explain why no significant main effect of the leader's entrepreneurship was found on any outcomes. Secondly, the lack of effectiveness of the identity entrepreneurship quality of the national political leader even compared to the control condition, may be related to the health theme. Previous studies show that experts, scientists, and health authorities are more effective in guiding people to healthy behaviors than national, political, and government leaders regarding healthy behaviors (e.g., Lee and Park, 2016; Major and Coleman, 2012), including compliance with preventive measures against COVID-19 (e.g., Ahluwalia et al., 2021). This may relate to people's greater trust in health authorities in matters that directly concern their health and require expert knowledge. Concordantly, previous studies showed that individuals are skeptical of health messages from government authorities (Teasdale and Yardley, 2011), finding them less persuasive than scientists regarding vaccination decisions (Salali and Uysal, 2021). Thus, we encourage future studies that compare public trust in health experts and national political leaders.

We consider that the present study has valuable outcomes for practical implications in health communication. It seems crucial to take more care over-delivering health messages to the masses in ambiguous and crisis times, as negative portrayals of the majority, such as selfish, panic-buying consumers, might create the opposite effect that was intended. To encourage people to comply with the preventive measures in daily life, authorities or media often emphasize that it is not sufficient to advocate behavioral adherence to measures and that the role of goodwill should be considered when emphasizing the seriousness of the risks. It should also be noted that not only in crisis but also at other times when a new health behavior is required to be adopted within a society, it seems insufficient to explain the importance of this behavior or the risks that may arise in its absence. Rather, the behavior in question should be presented as widely accepted, performed, and supported by others. Also, although we did not find a significant main influence regarding political leadership, the interaction effect of leadership and descriptive norm implies that positive framing would be more effective if voiced by leaders. As a result, it seems critical to be aware of the importance of positively framed descriptive and injunctive norms in public messages. Rather than obstructive content, positive and supportive social norms should be emphasized, especially if mass behavior change is intended.

Our study builds on a tradition of imaginary scenario experiments used frequently in social psychology. (West et al., 2011). This methodology has both advantages and disadvantages. Implementing this method allows for describing a more realistic and naturalistic context. Therefore, the responses given while imagining oneself in a hypothetical situation were usually reported as very similar to the actual behaviors in the real world (Giessner and van Knippenberg, 2008). Again, the findings of the scenario experiments were consistent with the results of the survey studies and the laboratory experiments (e.g., De Cremer et al., 2005). As a result, there seem to be enough reasons to consider our method valid. And yet, to control confounding factors such as political orientations or ideologies, presenting Cameroon rather than Turkey as the experimental framework does not automatically guarantee that participants will distance themselves from the norms operating in Turkey and from its political leader. In this regard, we must emphasize that replication of this study, whether through surveys or laboratory experiments, would supplement our findings.

The current study is not free of other shortcomings. First, we were not able to include group identification variables in the study. Previous studies indicated that group identification is a crucial factor that affects various group-level phenomena. For example, group members' prototypicality perceptions of the leader vary according to their identification levels, which eventually affects the endorsement of group leaders (Birney et al., 2022). However, the experimental design we implemented in this study did not allow us to measure participants' national identification levels. On the other hand, our scenarios were fiction, and participants were required to imagine themselves as Cameroonians. The phrase "If I were Cameroonian … " was used so that participants could hypothetically categorize themselves in a national group, i.e., Cameroonians, which constituted the base for our manipulations. Yet, such a formulation might have been influenced by the participants' identifications with their actual national identities. When interpreting the results, this point should be taken into account.

Second, we couldn't examine the roles of background variables such as personal attitudes, traits, values, emotions (fear), perceived risks, and demographics. Each of these variables influences whether particular health behaviors are performed (Guidry et al., 2021; Seddig et al., 2022). In particular, the fact that the study sample consists of university students is a significant limitation. Since university students may have psychological motivations and personality traits that differ from the general population (Hanel and Vione, 2016), it is necessary to be careful about the representativeness of the inferences based on the findings presented by the data consisting of the student sample (Wild et al., 2022). Although implementing an experimental procedure (random assignment to the experimental conditions) may eliminate the confounding effects of these individual-level variables, we strongly encourage studies based on representative samples.

## Credit author statement

The corresponding author is responsible for ensuring that the descriptions are accurate and agreed by all authors.; Serap Akfırat participated to the process of designing and conducting the study, data gathering, deciding appropriate analyses, writing the whole parts of the manuscript; Fatih Bayrak participated to the process of designing and conducting the study, data gathering, deciding appropriate analyses, analyzing the data, writing the whole parts of the manuscript; Emir Üzümçeker participated to the process of designing and conducting the study, data gathering, deciding appropriate analyses, analyzing the data, writing the whole parts of the manuscript.; Tolga Ergiyen participated to the process of designing and conducting the study, deciding appropriate analyses, analyzing the data, the writing the "Method" and "Results" sections of the manuscript; Taylan Yurtbakan Tolga Ergiyen participated to the process of designing and conducting the study, deciding appropriate analyses, writing the "Method" part section of the manuscript; Mete Sefa Uysal participated to the process of designing and conducting the study, deciding appropriate analyses, writing the "Introduction" and "Discussion" parts of the manuscript.

## Data availability

The anonymized raw data is publicly available at https://osf.io/szvh2/?view_only=37bec0123be74a789bc2ff9ab4283d30.

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