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How national leaders keep 'us' safe: A longitudinal, four-nation study exploring the role of identity leadership as a predictor of adherence to COVID-19 non-pharmaceutical interventions

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ABSTRACT

Objectives To investigate whether citizens' adherence to health-protective non-pharmaceutical interventions (NPIs) during the COVID-19 pandemic is predicted by identity leadership, wherein leaders are perceived to create a sense of shared national identity.

Design Observational two-wave study. Hypotheses testing was conducted with structural equation modelling.

Setting Data collection during the COVID-19 pandemic in China, Germany, Israel and the USA in April/May 2020 and four weeks later.

Participants Adults in China (n=548, 66.6% women), Germany (n=182, 78% women), Israel (n=198, 51.0% women) and the USA (n=108, 58.3% women).

Measures Identity leadership (assessed by the four-item Identity Leadership Inventory Short-Form) at Time 1, perceived shared national identification (PSNI; assessed with four items) and adherence to health-protective NPIs (assessed with 10 items that describe different health-protective interventions; for example, wearing face masks) at Time 2.

Results Identity leadership was positively associated with PSNI (95% CI 0.11 to 0.30, p<0.001) in all countries. This, in turn, was related to more adherence to health-protective NPIs in all countries (95% CI 0.03 to 0.36, $0.001 \leq p \leq 0.017$) except Israel (95% CI −0.03 to 0.27, p=0.119). In Germany, the more people saw Chancellor Merkel as engaging in identity leadership, the *more* they adhered to health-protective NPIs (95% CI 0.04 to 0.18, p=0.002). In the USA, in contrast, the more people perceived President Trump as engaging in identity leadership, the *less* they adhered to health-protective NPIs (95% CI −0.17 to −0.04, p=0.002).

Conclusions National leaders can make a difference by promoting a sense of shared identity among their citizens because people are more inclined to follow health-protective NPIs to the extent that they feel part of a united 'us'. However, the content of identity leadership (perceptions of what it means to be a nation's citizen) is essential, because this can also encourage people to disregard such recommendations.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The study's results are based on data collected simultaneously in China, Germany, Israel and the USA at two subsequent measurement points.
⇒ High dropout from measurement Time 1 to Time 2 resulted in smaller sample sizes that affect the internal validity of the results, but still enabled detection of the predicted direct and indirect effects.
⇒ The hypothesised indirect effect was tested with structural equation modelling.
⇒ In order to account for country-specific differences, mediation analyses were performed with constrained and unconstrained regression weights and model fit indices were evaluated.
⇒ We controlled for age, gender, parenthood and job status in the statistical analyses.

INTRODUCTION

The present research seeks to test the hypothesis that countries in which national leaders are perceived to create a sense of shared identity among the people they lead cope better with the COVID-19 pandemic because their citizens engage in more health-protective behaviours. This is important because, due to the absence of validated treatment strategies and vaccines, health-protective behaviours (i.e., non-pharmaceutical interventions, NPIs) were the main public health intervention that helped to combat the spread of the SARS-CoV-2 virus in the early phase of the pandemic.[1] These NPIs aimed to mitigate

person-to-person infection and suppress the spread of the virus through physical distancing, isolation and community containment procedures such as wearing masks.[1] Moreover, adherence to these NPIs was generally effective in slowing the spread of the virus. For example, physical distancing reduced the spread of infection by up to 90% and wearing face masks reduced deaths by up to 65%.[2 3] Critically, though, the efficacy of these NPIs depended on the degree to which people adhered to them. For example, modelling suggested that the number of deaths caused by COVID-19 was nearly halved when 80% (versus 20%) of people wore masks.[3]

In this context, the question of why people adhere to NPIs is crucially important. One factor that has been the focus of a great deal of public and academic commentary is *leadership*. For example, the editors of the *British Medical Journal* argued that President Trump's 'astounding incompetence' was a major determinant of the high number of COVID-19 deaths in the USA (p. 2).[4] What, though, does *good* leadership mean in this context? At one level, of course, it involves implementing sound policies that draw on high-quality science. But this alone is not sufficient to encourage adherence to policy.[5 6] Instead, we argue that national leaders also must create a social environment in which citizens are intrinsically motivated to show more adherence. This, we argue, can be achieved through *identity leadership* in which leaders seek to build a sense of shared group membership among their followers and associate this with common purposes, goals, norms and values.[7] This type of leadership centres on a sense of shared social identity (a united sense of 'us') within a group that motivates group members to contribute to collective goals through processes of *engaged followership*.[8 9] Supporting these claims, studies involving many thousands of employees in at least 30 countries have found that leaders' identity leadership is related to team identification and, in turn, to more trust in the leader, as well as to more follower satisfaction and engagement.[8 10] In the context of COVID-19 management, this analysis suggests that national leaders' capacity to secure support for their policies will be contingent on their promotion of a sense of shared national identity among their citizens.[11] And in this context, one key form of engaged followership is adherence to various recommendations designed to slow the spread of infection, such as self-isolation, physical distancing or wearing masks.

Consistent with these ideas, countries with a high level of shared national identity have generally been more successful in fighting COVID-19 in the early stages of the pandemic (e.g., New Zealand and Germany vs Belgium and the USA).[12] Moreover, a study conducted across 67 countries found that people's national identification was a significant predictor of their compliance with, and support for, various NPIs designed to combat the virus. It was also a better predictor than other factors, including people's standard of living and political orientation.[13]

Yet, despite being the focus of considerable speculation,[5 14] to date, no studies have explored the link between national leaders' identity leadership and their citizens' perceived shared national identification (PSNI) and adherence to NPIs. This is the goal of the present paper. To this end, we conducted a study across four countries—China, Germany, Israel and the USA—designed to test the following two key hypotheses:

H1. People who perceive their national leader to engage in more identity leadership will perceive a higher shared national identification (PSNI) within their country.

H2. PSNI in turn will predict people's self-reported adherence to NPIs.

Combined, these hypotheses suggest an indirect association between identity leadership and adherence to health-protective NPIs via PSNI.

METHODS

Design and setting

We conducted a two-wave study with a 4-week time lag between measurement points as part of an international research project involving 13 countries. However, we focused on four countries for which there were matching data across the two measurement points—China, Germany, Israel and the USA.

PARTICIPANT RECRUITMENTS

Data collection took place from March to June 2020. Participation was voluntary and anonymous, and people also provided informed consent. At the end of the first survey, individuals were asked about their willingness to also participate in the follow-up survey. In Germany and the USA, the survey link was distributed via different social and university networks. To collect comparable data (in the same time frame) in China and Israel, we used panel providers in these countries. To participate, people were required to be of legal age and to have their main residence in one of the four countries (i.e., China, Germany, Israel or the USA). Attrition data are presented in figure 1. Overall, 2301 people participated in the first survey. We excluded three underage Chinese participants and 14 people from the German data set as they indicated not to live in Germany. This resulted in a final sample size of 2284 participants at Time 1 (China: n=763; Germany: n=960; Israel: n=247; USA: n=314).

At Time 2, we invited 293 (93.31%) US, 682 (71.04%) German, 550 (72.08%) Chinese and all Israeli participants to respond to the survey. Of those who were invited, 108 US (36.86%), 246 German (36.07%), 550 Chinese (100%) and 215 Israeli participants (87.04%) completed the Time 2 questionnaire. Finally, we were able to match Time 1 and Time 2 data of 548 Chinese (dropout rate: 28.18%), 182 German (dropout rate: 81.04%), 198 Israeli (dropout rate: 19.84%) and 108 US participants (dropout rate: 65.61%). The higher response rates in China and Israel may reflect the use of panel providers in these countries who have access to particularly committed

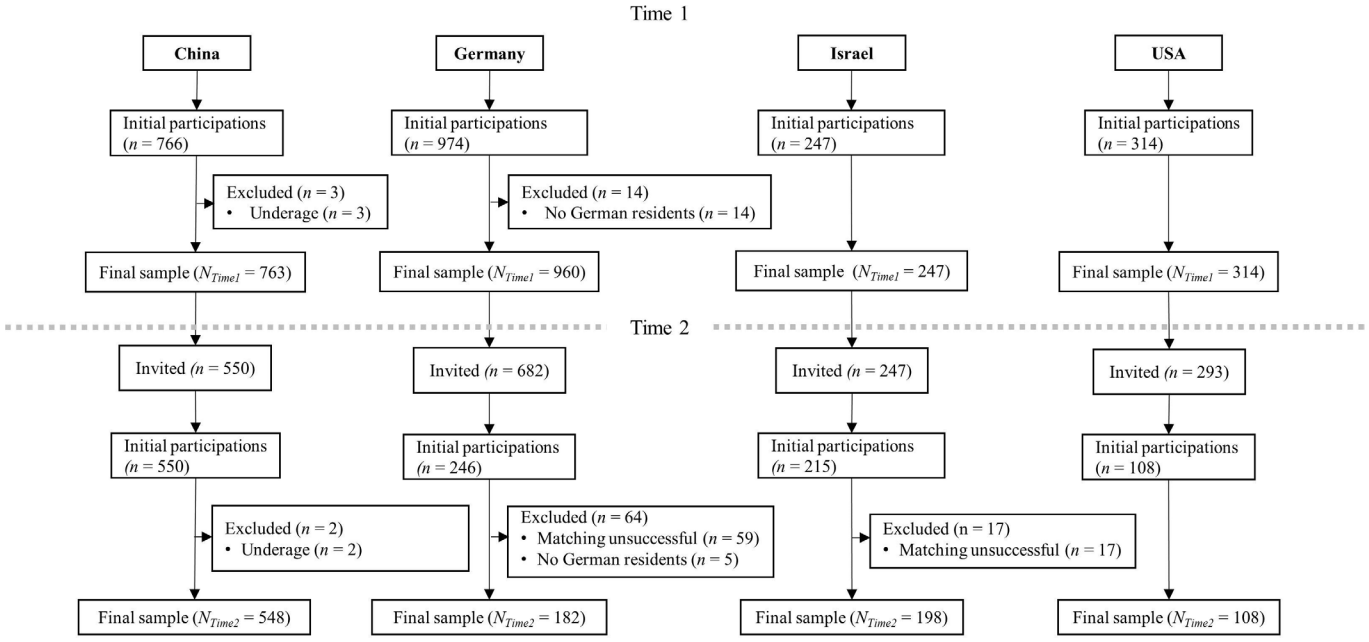

Figure 1 Dropouts and exclusions in the four subsamples at Time 1 and Time 2.

participants as they recruit self-motivated volunteers who receive a small financial incentive for their participation.[15]

MEASURES

We used validated measures whereby native speakers translated the original English items into Chinese, German and Hebrew. (Further measures were included in the study as this was part of a larger research project. Only measures relevant to this paper are reported here. All study-relevant items are presented in the online supplemental appendix.)

Identity leadership was assessed at Time 1 by asking participants to indicate their perceptions of their national leader's identity leadership on the four-item version of the Identity Leadership Inventory (e.g., 'This leader acts as a champion for the nation'), using 7-point Likert Scales (mean score ranges from 1 to 7 with higher scores indicating higher identity leadership).[16] Relevant demographic and control variables were also obtained in the first survey (i.e., age, gender, employment status and parenthood). The Identity Leadership Inventory has been found reliable and valid in studies on all inhabited continents.[8 10]

PSNI was assessed at Time 2 using four items. These were adapted from the group identification scale[17] to refer to the first-person plural rather than the first-person singular (e.g., 'We identify with our country'), using 5-point Likert Scales (mean score ranges from 1 to 5, with higher scores indicating higher perceptions of shared national identification). The scale to measure group identification has been shown to be reliable across cultural contexts.[8 10]

Adherence to health-protective NPIs was assessed at Time 2 by asking participants to indicate the extent to which they acted in line with 10 behaviours recommended by governments and relevant health bodies (e.g., 'I use disinfectants regularly'), using 5-point Likert Scales (mean score ranges from 1 to 5 with higher scores indicating more adherence).

STATISTICAL ANALYSIS

We tested both hypotheses in one model by performing mediation analyses[18] and using maximum likelihood robust estimation in MPlus v.8.3.[19] Mediation analyses test whether a mediator (i.e., PSNI) can explain the underlying mechanism of the relationship between two variables (i.e., identity leadership as the independent variable and adherence to NPIs as the dependent variable). As illustrated in figure 2, a simple mediation model consists of three direct paths that represent the relationships between the respective variables. As we were particularly interested in whether identity leadership translates into more adherence via more PSNI, we followed a modern mediation approach that aims to detect an indirect effect of identity leadership on adherence to NPIs via PSNI (represented by path a*b).[20 21] Here, path c' would represent the part of the relation between identity leadership and adherence that is independent of PSNI. We estimated that 296 participants (74 from each country) would provide 80% power to detect an indirect effect (a*b; using 89% power to detect a medium-sized effect of path a and path b).[22]

To test H1 and H2, PSNI (at Time 2) was regressed on identity leadership (at Time 1); adherence to health-protective NPIs (at Time 2) was regressed on identity leadership (Time 1) and PSNI (Time 2). The product of the unstandardised regression coefficients was calculated to determine the indirect effect and we used 95% CIs to obtain the direct and indirect effects.

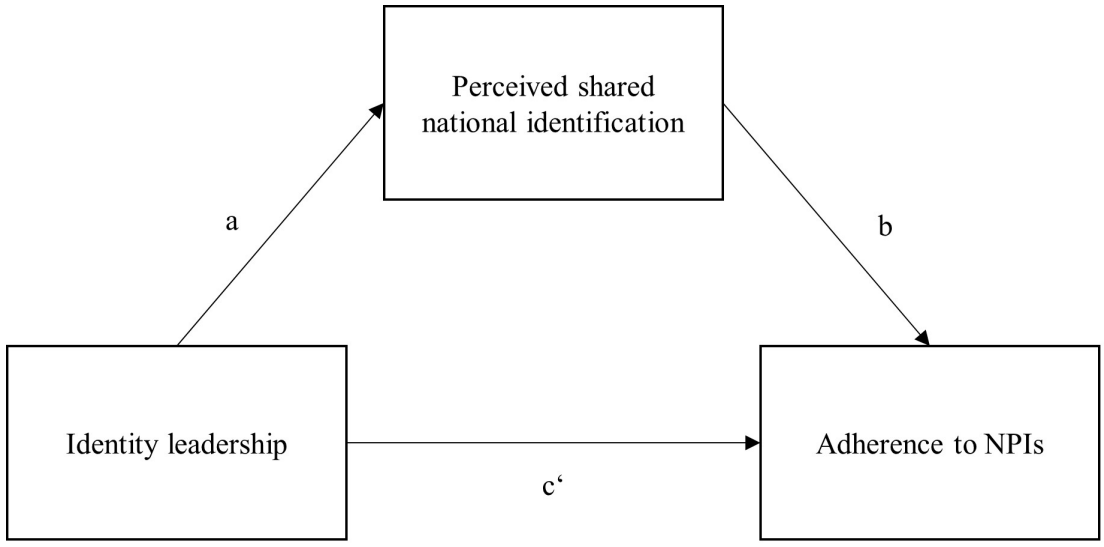

Figure 2 Mediation model. NPI, non-pharmaceutical intervention.

To account for verified cultural differences in terms of institutional collectivism (i.e., preservation of collective interests through rules and institutions), power distance (i.e., power distribution within a country), and value of participative leadership (i.e., followers are involved in decisional and executive processes)[23] as well as reported country-dependence of the NPIs effectiveness,[24] we ran this model twice. In the first model, we constrained all regression weights to be equal among the four subsamples (i.e., China, Germany, Israel, USA). In the second model, we allowed the regression weights to differ across subsamples to account for the possible cultural differences. Model fit was determined through the established fit indices (non-significant χ^2 ($p>0.05$), Root Mean Square Error of Approximation (RMSEA) <0.08, Standardised Root Mean Square Residual (SRMR) <0.08, Comparative Fit Index (CFI) >0.0.90, Tucker–Lewis Index (TLI) >0.90).[25]

We experienced missing values at the person level (i.e., individuals who did not participate at Time 2), and, as in previous empirical research,[26] we decided to conduct all analyses with full cases only. Following guidelines for handling missing data,[27] we report systematic non-response parameters and performed dropout analyses (with, overall, no notable differences, see online supplemental appendix). As we obtained differences in age, gender, job status and parenthood status between the four countries (see table 1), we controlled for these in all subsequent analyses.

Patient and public involvement

The questionnaire was sent out to members of the general public. Besides being involved as participants, the general public was not involved in formulating the overall research question, the choice of assessed variables, or the design, conduct or report of this study.

Table 1 Demographic variables and statistical comparisons across China, Germany, Israel and USA

	China	Germany	Israel	USA	P value*
Age					
M (SD)	30.38 (5.97)	34.94 (13.65)	40.76 (11.41)	44.51 (10.66)	<0.001
Gender n (%)					
Female	365 (66.6)	142 (78.0)	101 (51.0)	63 (58.3)	<0.001
Male	181 (33.0)	40 (22.0)	97 (49.0)	45 (41.7)	
Diverse†	2 (0.4)	0	0	0	
Job status n (%)					
Employed	448 (81.8)	131 (72.0)	161 (81.3)	90 (83.3)	0.025
Unemployed	100 (18.2)	51 (28.0)	37 (18.7)	18 (16.7)	
Parenthood n (%)					
Yes	238 (43.4)	63 (34.6)	134 (67.7)	52 (48.1)	<0.001
No	310 (56.6)	119 (65.4)	64 (32.3)	56 (51.9)	

*P values were calculated with a univariate analysis of variance or Pearson's χ^2 test.
†Two people were excluded from Pearson's χ^2 analysis.

Table 2 Means (*M*), standard deviations (*SD*), skewness (*SK*) and kurtosis-values (*RKU*), internal consistencies (α) and Pearson correlations among the study variables in the Chinese, German, Israeli and US subsamples

Chinese subsample (n=548)	M	SD	SK	RKU	α	1	2
1.Identity leadership†	6.43	0.77	−2.15	6.97	0.91		
2.Perceived shared national identification‡	4.30	0.51	−0.53	−0.13	0.77	0.31***	
3.Adherence to health-protective NPIs§	4.16	0.41	−0.36	−0.48	0.74	0.14**	0.37***
German subsample (n=182)							
1.Identity leadership	5.31	1.20	−0.93	0.93	0.88		
2.Perceived shared national identification	3.87	0.62	−0.36	0.12	0.80	0.41***	
3.Adherence to health-protective NPIs	3.87	0.57	−0.54	0.55	0.71	0.33***	0.31***
Israeli subsample (n=198)							
1.Identity leadership	3.53	1.89	0.28	−1.11	0.93		
2.Perceived shared national identification	3.32	0.78	−0.69	0.85	0.80	0.41***	
3.Adherence to health-protective NPIs	3.66	0.60	−0.56	1.25	0.81	0.19**	0.20**
US subsample (n=108)							
1.Identity leadership	2.44	1.96	0.94	−0.74	0.97		
2.Perceived shared national identification	3.55	0.88	−0.92	0.57	0.92	0.41***	
3.Adherence to health-protective NPIs	4.19	0.65	−0.82	0.57	0.84	−0.19	0.17

*$p<0.05$, **$p<0.01$, ***$p<0.001$.
†Mean scores on the Identity Leadership Inventory Short-Form range from 1 to 7, with higher scores indicating a stronger perception of the national leader's engagement in identity leadership. Identity leadership was assessed at Time 1.
‡Mean scores on the PSNI Scale range from 1 to 5, with higher scores indicating more PSNI within the respective country. PSNI was assessed at Time 2.
§Mean scores on the Adherence to Health-Protective NPIs Scale range from 1 to 5, with higher scores indicating a stronger adherence to the NPIs. Adherence to NPIs was assessed at Time 2.
NPI, non-pharmaceutical intervention.

RESULTS

Descriptive analyses

Descriptive statistics and correlations between study variables are presented in table 2. All study variables (i.e., identity leadership, PSNI and adherence) were positively correlated in China, Germany and Israel. In the US sample, only the correlation between identity leadership and PSNI was positive and significant.

Hypothesis testing

The first model, in which we constrained all regression weights to be equal across the four subsamples, had a poor fit to the data (χ^2=29.85, df=9, p<0.001, scaling correction factor for MLR=1.18, CFI=0.93, TLI=0.64, RMSEA=0.10, SRMR=0.08). In line with H1, this model revealed that identity leadership was positively related to PSNI (b=0.19, SE=0.02, z=10.84, p<0.001, 95% CI 0.15 to 22). Here, the positive regression coefficient b indicates that the more participants perceived their national leader to engage in identity leadership the more perceived shared national identity they reported. Moreover, in line with H2, PSNI was in turn positively related to adherence to health-protective NPIs (b=0.23, SE=0.03, z=8.19, p<0.001, 95% CI 0.18 to 0.29). Again, a positive regression coefficient means that participants who perceived a stronger shared national identity reported more adherence behaviours. The indirect effect from identity leadership to health-protective NPIs via PSNI was significant, b=0.04, SE=0.01, z=6.25, p<0.001, 95% CI 0.03 to 0.06. The remaining direct effect was not significant, b=0.01, SE=0.01, z=0.78, p=0.433, 95% CI −0.02 to 0.04.

However, the suboptimal model fit suggests country-specific effects, which cannot be detected when constraining the regression weights to be equal across countries. Accordingly, we tested a second model in which the regression weights were allowed to differ across the four subsamples. In this model, we only included control variables (age, gender, parenthood and job status) into the country-specific analysis that were significant in the constrained model. Accordingly, we controlled in China for age, in Germany for gender and in the USA for parenthood. This model had a very good model fit (χ^2=33.85, df=26, p=0.139, scaling correction factor for MLR=1.02, CFI=0.97, TLI=0.95, RMSEA=0.03, SRMR=0.05). As can be seen in table 3, and supporting H1, the results of this model revealed a positive association between identity leadership and PSNI in China (b=0.21, SE=0.03, z=6.25, p<0.001, 95% CI 0.14 to 27), Germany (b=0.21, SE=0.05, z=4.64, p<0.001, 95% CI 0.12 to 0.30), Israel (b=0.17, SE=0.03, z=5.83, p<0.001, 95% CI 0.11 to 0.23) and the USA (b=0.18, SE=0.03, z=5.32, p<0.001, 95% CI 0.12 to 0.25). In line with the results of the first model, participants from all countries who perceived their national

Table 3 Results of hypothesis testing (unconstrained mediation model)

	Chinese subsample		German subsample		Israeli subsample		US subsample	
	PSNI	Adherence to health-protective NPIs	PSNI	Adherence to health-protective NPIs	PSNI	Adherence to health-protective NPIs	PSNI	Adherence to health-protective NPIs
	b (SE)† (95% CI)	b (SE) (95% CI)	b (SE) (95% CI)	b (SE) (95% CI)	b (SE) (95% CI)	b (SE) (95% CI)	b (SE) (95% CI)	b (SE) (95% CI)
Age	−0.01 (0.00) (−0.01 to 0.00)	0.01 (0.00)*** (0.00 to 0.01)	–	–	–	–	–	–
Children‡	–	–	–	–	–	–	0.17 (0.15) (−0.12 to 0.47)	0.42 (0.11)*** (0.21 to 0.64)
Gender§	–	–	−0.05 (0.11) (−0.26 to 0.16)	−0.18 (0.09)* (−0.36 to −0.00)	–	–	–	–
IL	0.21 (0.03)*** (0.14 to 0.27)	0.02 (0.02) (−0.03 to 0.06)	0.21 (0.05)*** (0.12 to 0.30)	0.11 (0.04)** (0.04 to 0.18)	0.17 (0.03)*** (0.11 to 0.23)	0.04 (0.03) (−0.01 to 0.09)	0.18 (0.03)*** (0.12 to 0.25)	−0.10 (0.03)** (−0.17 to −0.04)
PSNI		0.29 (0.03)*** (0.23 to 0.36)		0.20 (0.08)* (0.04 to 0.35)		0.12 (0.08) (−0.03 to 0.27)		0.19 (0.08)* (0.03 to 0.35)

*p<0.05, **p<0.01, ***p<0.001.
†The result is an unstandardised regression coefficient and SE.
‡1 = yes, 0 = no.
§1 = women, 2 = men, 3 = diverse
IL, identity leadership; NPI, non-pharmaceutical intervention; PSNI, perceived shared national identification.

leader to engage in identity leadership reported more shared national identification within their respective country. The results also supported H2 in three of the four countries: PSNI was positively associated with adherence to health-protective NPIs in China (b=0.29, SE=0.03, z=8.87, p<0.001, 95% CI 0.23 to 0.36), Germany (b=0.20, SE=0.08, z=2.44, p=0.015, 95% CI 0.04 to 0.35), and the USA (b=0.19, SE=0.08, z=2.38, p=0.017, 95% CI 0.03 to 0.35), but not in Israel (b=0.12, SE=0.08, z=1.56, p=0.119, 95% −0.03 to 0.27). Accordingly, Chinese, German and US participants who experienced more PSNI within their country reported more adherence to NPIs. The indirect effect was significant in China (b=0.06, SE=0.01, z=5.10, p<0.001, 95% CI 0.04 to 0.08), in Germany (b=0.04, SE=0.02, z=2.02, p=0.044, 95% CI 0.00 to 0.08), and in the USA (b=0.04, SE=0.02, z=2.20, p=0.028, 95% CI 0.00 to 0.07). There was no evidence of an indirect association in Israel (b=0.02, SE=0.01, z=1.46, p=0.145, 95% CI −0.01 to 0.05).

Furthermore, after accounting for the indirect effect through increased PSNI, there was a residual direct positive association between identity leadership and adherence to health-protective NPIs (path c' in figure 2) in Germany (b=0.11, SE=0.04, z=3.11, p=0.002, 95% CI 0.04 to 0.18). This suggests that the more respondents perceived the German chancellor, Angela Merkel, to engage in identity leadership, the more they adhered to health-protective NPIs (independently of the impact of her perceived identity leadership on PSNI). This same direct association was also significant in the USA, but here it was *negative* (b=−0.10, SE=0.03, z=−3.05, p=0.002, 95% CI −0.17 to −0.04). This suggests that the more respondents perceived Donald Trump as engaging in identity leadership, the *less* they adhered to health-protective NPIs.

In addition, we ran all analyses without age, gender, children and job as covariates. This did not change our results.

DISCUSSION

Across four countries (China, Germany, Israel and the USA), identity leadership was related to people perceiving their fellow citizens to share a national identification, a sense that 'we are in this together'. Furthermore, this PSNI was positively related to adherence to health-protective NPIs in China, Germany and the USA. However, this was not the case in Israel.

The results of this study indicate that people who perceive there to be a sense of shared identity within their country act to advance the common good by adhering to recommended safety behaviours to protect themselves and others. The missing relationship between PSNI and health-protective NPIs in Israel may be explained by Israel being a low conformity nation as the country is characterised by a 'loose' (versus tight) culture with weaker social norms and higher tolerance of deviant behaviour.[28] People living in loose nations not only tend to challenge decisions and plans of official institutions more than they do in tight nations but they also have a wider interpretation of appropriate behaviours in daily situations (e.g., those related to health). If it is correct, this explanation implies that national (identity) leadership has its limits. In other words, leaders must reckon with potential obstacles that are culturally determined and deeply rooted in their society. For example, whereas in collectivistic societies people may be more willing to sacrifice their individual needs for the greater good, those in individualistic countries may insist more on personal freedom and privacy (values that were partially violated by certain NPIs).[29] Indeed, research indicates that collectivism was significantly negatively related to country-specific infection rates and mortality rates and that governments in collectivistic nations were able to implement NPIs faster.[29–31] Power distance is another important factor that varies across countries and has been found to relate negatively to infection rates as people in societies with higher power distance accept newly implemented NPIs more.[29]

As well as support for the general hypothesis that identity leadership contributes to citizens' perceptions of shared national identification, which, in turn, are predictive of adherence, there was also evidence of a remaining direct effect of identity leadership on adherence in Germany and the USA. However, these had opposite signs—such that the remaining direct effect of identity leadership was positive in Germany but negative in the USA. This suggests the specific *content* of the national identity that leaders promote matters. In Germany, Chancellor Angela Merkel continually appealed to the public to stick to the implemented recommendations. This behaviour contrasts with the situation in the USA, where President Donald Trump repeatedly downplayed the threat posed by COVID-19 and personally refused to wear a mask.[32] This suggests that followers align their behaviour with that of their leader—as well as the norms and values that the leader's behaviour promotes. In line with this explanation, research shows that identity leadership strengthens relational identification with a leader (i.e., perceived leader-follower relationship from the follower's perspective), which in turn, motivates people to engage in behaviours that would impress their leader.[33] Interestingly, in China (a country with a collectivistic world view), we did not find this same 'leader–follower' effect as PSNI explained all the variance in adherence to NPIs. This speaks to the possibility that a direct relationship between leaders and followers is more relevant in societies with more individualistic values, whereas in collective societies (such as China) the 'we'-perspective is exceptionally strong and influential. This suggests that beyond the consistently positive role that identity leadership plays in creating a sense of solidarity among citizens, it can also have additional positive or negative consequences to the extent that leaders promote consistent or mixed messages supporting health-protective behaviour.

Finally, the positive indirect and negative direct effects in the USA might seem contradictory at first glance. However, it is important to interpret the relationships

between the respective variables independently of one another. In particular, President Trump reduced adherence through the content of his leadership (path c'; figure 2), but at the same time, he was able to develop a sense of shared national identity among his followership (path a). Importantly, this does not imply that US citizens who opposed Trump's presidency did not perceive there to be a sense of shared national identity within the USA (in fact, these people might feel especially connected because of their shared rejection of Trump as a national leader). In other words, besides perceiving Trump as an identity leader, there are multiple reasons why people should perceive a shared national identity within their country. Accordingly, the positive relationship between PSNI and adherent behaviour (path b) has to be interpreted independently of the remaining relationships and indicates that—overall—citizens who feel some kind of connection to their fellow citizens tend to show more adherent behaviour.

It is also worth noting that Trump's identity leadership was still successful in the sense that he was able to secure loyal and dedicated followership among a large portion of the electorate. From this point of view, even though his identity leadership promoted health-destructive norms and values, it was nevertheless successful in supporting his own and his followers' political goals. It is just that these were inimical to containment of COVID-19.[12]

Strengths and weaknesses

This study's strengths include the simultaneous collection of data in four countries across two time points at a decisive moment of the COVID-19 pandemic. While the correlational nature of the data precludes causal inference, the findings are consistent with a broader corpus of experimental and survey research that speaks to the importance of identity leadership for health behaviour in the pandemic.[12 13] However, we did not examine region-specific or country-specific differences that have previously been identified as having an impact on the course of the pandemic. Besides the culture-specific aspects that we already discussed, there are also regional factors that contribute to significant differences in terms of adherence and infection rates within a country.[34] For instance, German regions with more right-wing voters or US regions with more individualistic values reported higher infection rates, because people adhered less to NPIs.[35 36] Furthermore, we experienced significant dropout over time that resulted in small sample sizes in the respective countries. Even though dropout rates of 40% or more are a reality in longitudinal research,[37] these can compromise the internal validity of our findings. We statistically compared responders and non-responders on identity leadership and PSNI (online supplemental appendix), but we were not able to test for differences with regard to adherence to health-protective NPIs (because we did not assess all items at Time 1). Here, the risk of selection bias towards more adherent people at Time 2 is possible. In particular, previous research has indicated that more conscientious people tend to drop out less.[38] Their personality traits, such as being responsible and compliant, are also associated with more adherence to COVID-19 health regulations.[39 40] Additionally, our results show that responders in the USA experienced more PSNI than non-responders (in China, Germany and Israel there were no significant differences concerning identity leadership or PSNI); as PSNI and adherence to health-protective NPIs were positively correlated, these results are in line with our reasoning that participants at Time 2 were possibly more adherent. This and the fact that we gathered data predominantly from more educated people suggests that our results may be based on a rather compliant sample. Therefore, the generalisation of our results might be limited. Due to the lack of validated instruments to measure adherence to COVID-19 health-protecting interventions, the items used in the present study were formulated by the authors. However, this allowed us to assess different health-protecting behaviours and meant that we did not rely solely on one overall measure of adherence as in other studies.[41]

What can (national) leaders do right?

Going beyond previous research, the present data indicate that national leaders' identity leadership contributes to citizens' adherence to health-protective NPIs, which, in turn, benefits their health.[3] This suggests that leaders need to appreciate the importance of a united sense of 'us' as a resource for fighting health crises while also recognising their role in shaping individuals' behavioural responses. Indeed, this sense of shared social identity is a life-saver in so far as it mobilises people to engage in health behaviours that protect their fellow citizens. As the editors of the *British Medical Journal* observed, it is thus lamentable that in the early days of the pandemic, leadership of this form was often conspicuous by its absence.

Future research implications

This study sets an important agenda for future research. First, because the results we have presented are limited to four countries, we encourage further research to explore this mechanism in other countries and cultures that also takes potential regional differences into account. Furthermore, in the light of the pandemic, trust in one's own government has been identified as another predictor of adherence to COVID-19 regulations.[41 42] Accordingly, in future research, it would be worth focusing on the interplay between trust in governments and shared national identification as both constructs seem to explain the link between national leadership and adherence to health-protective NPIs. Here we would anticipate that distrust in one's own government would not automatically result in less adherence as long as a shared national identity is present within the country and motivates citizens to engage in health-protective behaviours for 'us' instead of 'them'. Another factor that is highly associated with (lack of) trust in authorities is the tendency to believe in conspiracy theories, as these can significantly reduce

physical distancing and support for governmental regulations.[43] As people tend to turn to such alternative explanations when they feel threatened or alienated,[44 45] we anticipate that (identity) leaders can reduce the spread of such theories by ensuring that people feel safely embedded within a national community (so that they feel a sense of 'we'-ness) and perceive their government as emblematic of this.

CONCLUSION

Data across four countries showed that during the COVID-19 pandemic, national leaders were able to strengthen perceived shared national identity within their country by engaging in identity leadership. This perceived shared national identity in turn was related to more adherence to NPIs in China, Germany and the USA, but not in Israel. Accordingly, it appears that citizens who perceived there to be strong social connection among citizens in their country (a sense of 'we'-ness) adhered more to NPIs because they had a higher motivation (1) to protect fellow citizens and (2) to contribute to collective goals. Nevertheless, we also found that the *identity content* that a given national leader promotes also has a significant bearing on (non-)adherence—at least in more individualistic countries like Germany and the USA. In sum, then, to promote public health, leaders not only need to create a sense of us but also need to ensure that they model a sense of us-ness that centres on adherence (rather than defiance) to health measures.

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Competing interests None declared.

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Patient consent for publication Not applicable.

Ethics approval This study involves human participants and was approved by a co-author's institution, Faculty of Commerce's Ethics Board (University of Cape Town; REF: REC 2020/03/013). Participants gave informed consent to participate in the study before taking part.

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Supplementary Appendix

How National Leaders Keep 'us' Safe – A Longitudinal Four-Nation Study Exploring the Role of Identity Leadership as a Predictor of Adherence to COVID-19 Non-Pharmaceutical Interventions

Table of Contents

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Items

Identity leadership

1. My country's leader is a model member of our country.
2. My country's leader acts as a champion for our country.
3. My country's leader creates a sense of cohesion within our country.
4. My country's leader creates structures that are useful for our country.

Perceived shared national identification (PSNI)

1. In our country, we identify with each other.
2. We are a part of our country.
3. We feel strong ties within our country.
4. We are glad to be in our country.

Adherence to health-protective NPIs

1. I try to reduce social contacts to the bare minimum.
2. I keep away from public places.
3. I make sure to keep a distance of at least 1.5 meters (5 feet) between myself and other people.
4. I do not meet with friends physically anymore.
5. I try to protect high-risk individuals (e.g., elders, people with chronic diseases) by keeping my distance from them.
6. I support high-risk individuals (e.g., elders, people with chronic diseases), for instance, by offering them help with shopping.
7. I encourage others to follow the recommendations to keep a distance, washing hands etc.
8. I offer emotional support to members of my family (e.g. calling my parents/grandparents more frequently than usual).
9. I wear a mask in public.
10. I use disinfectants regularly.

Handling of missing data

We experienced dropouts from Time 1 to Time 2 in all four countries (see country-specific dropout-rates in Table S1). As imputation methods for missing data would require at least partly available observed variables at Time 2 (as it is the case with item-level and construct-level missings), we decided to use only full cases for our analyses. Therefore, we only included people who participated at Time 1 and Time 2 (i.e., responders). Following guidelines for handling missing data[1], we performed country-specific dropout-analyses, report country-specific response rates, and systematic nonresponse parameters (SNP, i.e. d_{miss}) for the variables, which we assessed at Time 1, namely identity leadership and perceived shared national identification (PSNI).

Dropout-Analyses

The dropout rate (i.e., people who only participated at Time 1 and not at Time 2) was 28.18% in China, 81.04% in Germany, 19.84% in Israel, and 65.61% in the US. By performing country-specific dropout analyses, we statistically compared mean values of responders (i.e., people who participated at Time 2) and non-responders (i.e., people who only participated at Time 1 regardless of whether there were invited to participate in the Time 2 survey or not) on the two predictor variables identity leadership and PSNI at Time 1 as well as descriptive variables (i.e., age, gender, children and job status). The t- and χ^{2}-statistics and respective results are presented in Table S1 and Table S2. The results show that in the US, responders were significantly older than non-responders. In Germany and in the US, responders were also more likely to have children than non-responders. In China, responders were more likely to be employed than non-responders. Finally, responders reported more perceived shared national identification than non-responders in the US. All other test results indicated no differences between responders and non-responders.

Table S1. Mean comparisons between second and first-time only responders at Time 1 on the variables age, identity leadership and perceived shared national identification.

	Age	T	*df*	*p**	Identity leadership	T	*df*	*p**	Perceived shared national identification	T	*df*	*p**
China	*M* (*SD*)				*M* (*SD*)				*M* (*SD*)			
N_r †= 548	30.38 (5.97)	-.99	761	0.324	6.43 (.77)	1.47	761	0.142	4.44 (.52)	1.43	761	0.154
N_{nr}‡ = 215	29.90 (6.37)				6.52 (.79)				4.50 (.50)			
Germany												
N_r = 182	34.94 (13.65)	-1.82	252.89	0.070	5.31 (1.20)	-1.25	958	0.213	3.84 (.62)	-.15	958	0.883
N_{nr} = 778	32.93 (12.20)				5.17 (1.32)				3.83 (.70)			
Israel												
N_r = 198	40.76 (11.41)	.87	245	0.384	3.53 (1.89)	1.29	245	0.20	3.45 (.85)	1.40	245	0.164
N_{nr} = 49	42.33 (10.65)				3.91 (1.71)				3.64 (.81)			
USA												
N_r = 108	44.51 (10.66)	-3.62	312	< .001	2.44 (1.96)	-.522	201.60	0.603	3.88 (.83)	-2.34	312	0.020
N_{nr} = 206	39.92 (10.65)				2.32 (1.80)				3.66 (.81)			

Note. *M* = Mean; *SD* = standard deviation.

**p*-values were calculated with a t-test for independent samples.

† N_r = responders.

‡ N_{nr} = non-responders.

Table S2. Mean comparisons between second and first-time only responders at Time 1 on the variables gender, job status and parenthood.

	Gender†			*p value**	Job status		*p value**	Parenthood		*p value**
	female	male	diverse		employed	unemployed		yes	no	
China										
Time 1 only responders	157	57	1	.082	156	59	.005	90	125	.693
Time 1 and Time 2 responders	365	181	2		448	100		238	310	
Germany										
Time 1 only responders	604	168	6	.949	531	247	.328	207	571	.031
Time 1 and Time 2 responders	142	40	0		131	51		63	119	
Israel										
Time 1 only responders	18	31	0	.073	43	6	.287	40	9	.055
Time 1 and Time 2 responders	101	97	0		161	37		134	64	
USA										
Time 1 only responders	98	106	2	.083	177	29	.541	73	133	.029
Time 1 and Time 2 responders	63	45	0		90	18		52	56	

**p*-values were calculated with Pearson's chi-square test.

† People who responded 'diverse' were excluded from the Pearson's chi-square analysis.

Response rate and systematic nonresponse parameter

The country-specific response rates and systematic nonresponse parameters (SNP) are presented in Table S3. The response rates provided here are based on participants who were invited at Time 2 and matched successfully with their Time 1 data.

Systematic nonresponse parameters (SNP) are defined as standardized mean differences between responders and non-responders[2] (d_{miss}). Thus, d_{miss} is small (close to zero) when the mean values of responders and non-responders hardly differ and is indicative for missingness being completely at random. In such a scenario, listwise deletion does not result in biased parameter estimation.

The results show that the systematic nonresponse parameters in all countries on identity leadership and PSNI range from d_{miss} = -.27 – .23. These values are similar to previous reported values for SNPs and indicate no extraordinary biases due to person-level missingness.[1]

Table S3. Dropout- and response rates and nonresponse parameters calculated for identity leadership and perceived shared national identification measured at Time 1.

	Participants invited at Time 2	People who participated at Time 2†	Response rate††	Identity Leadership (Time 1)			Perceived shared national identification (Time 1)		
			(%)	R *M* (*SD*)	NR *M*(*SD*)	d_{miss}§	R *M* (*SD*)	NR *M*(*SD*)	d_{miss}
China	548‡	548	100.00	6.43 (0.77)	--	--	4.44 (.52)	--	--
Germany	682	182	26.69	5.31 (1.20)	5.26 (1.23)	-0.04	3.84 (0.62)	3.85 (0.67)	0.02
Israel	247	198	80.16	3.53 (1.98)	3.91 (1.71)	0.20	3.45 (0.85)	3.64 (0.81)	0.23
USA	293	108	36.99	2.44 (1.96)	2.32 (1.79)	-0.06	3.88 (0.83)	3.66 (0.83)	-0.27

Note. *M* = Mean; *SD* = standard deviation. R = responders (people who participated at Time 2); NR = non-responders (people who were invited but did not respond).

‡We invited 550 people at Time 2, but had to exclude two minors from this study.

† Participants who fulfilled all inclusion criteria and could be matched.

†† (Participants invited at Time 2/participants who participated at Time 2)*100.

§ *dmiss* is the standardized respondent/non-respondent mean difference of a variable (*dmiss* is not provided for China as the response rate is 100%).

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