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ORIGINAL ARTICLE

Organizations affect their employees' vaccine readiness: A self-perception theory perspective

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Abstract

Over the past 3 years, employees have constantly witnessed how their organizations have responded to the challenges posed by the COVID-19 pandemic. Here, we hypothesize that employees' perceptions of the COVID-19 safety climate of their organization positively affect their vaccine readiness. To examine the underlying mechanisms of this effect, we use a self-perception theory lens. Thus, we hypothesize that an organization's COVID-19 safety climate affects employees' COVID-19 vaccine readiness through employees' adherence to COVID-19 guidelines. We conducted a time-lagged study over the time span of 1 year ($N = 351$) to test our hypotheses. In general, results support our hypotheses. In particular, results showed that perceived COVID-19 safety climate assessed at an early stage of the pandemic (April 2020, when no vaccines were available) predicted employees' COVID-19 vaccine readiness more than a year later. In line with self-perception theory, this effect was mediated by employees' adherence to COVID-19 guidelines. The present study provides theoretical insight into the underlying mechanisms of organizational climate on employees' attitudes. From

a practical perspective, our results suggest that organizations are a powerful lever for promoting vaccine readiness.

KEYWORDS

COVID-19, organizational climate, safety climate, self-perception theory, vaccine readiness

INTRODUCTION

The COVID-19 pandemic has presented enormous challenges for organizations. To address these challenges, organizations have implemented several safety policies and measures such as providing protective equipment, being responsive to employees' ideas about improving safety, and, ideally, adopting a safety-first strategy by placing safety above economic concerns. Employees have observed these organizational measures over the last years, and their perceptions of these practices and policies constitute the organization's COVID-19 safety climate (Bazzoli & Probst, 2022; Hubert et al., 2022).

Previous research on organizational climate has shown that organizations affect their employees' attitudes and behavior in a wide range of areas (Schneider et al., 2013, 2017). However, less is known about how far the effects of organizational climate reach into employees' private life. In addition, the mechanisms underlying the effects of organizational climate on employees' attitudes are poorly understood (Schneider et al., 2013, 2017). The present paper aims to address these two research gaps.

In this paper, we argue that the effects of organizational climate on employees' attitudes are at least partially due to a *self-perception process* (Bem, 1972). Self-perception theory argues that individuals infer their attitudes from observing their own behavior. In line with this notion, we propose that organizational climate first affects employees' behavior in the immediate work context, which, due to a self-perception process, affects employees' attitudes (both at work and in private life). Thus, we argue that if employees adhere to COVID-19 guidelines in the work context, they will be likely to perceive themselves as taking COVID-19 and measures to prevent its spread seriously and, hence, develop positive attitudes toward vaccination against COVID-19. In conclusion, we predict that the effect of COVID-19 safety climate on COVID-19 vaccine readiness is mediated by employees' adherence to COVID-19 guidelines. In a two-wave study over the course of 1 year, we examined this hypothesis.

With the present research, we make several contributions to the literature on perceived organizational climate and vaccine readiness. First, we extend research on perceived organizational climate by investigating whether perceptions of organizational climate also impact employees' nonwork life. More specifically, we examine whether perceived organizational climate can even affect public health-relevant attitudes (i.e., vaccine readiness). This is an important extension to the literature on organizational climate because the predominant focus in the literature is still on the effects of organizational climate on employees' attitudes and behavior at work, which neglects the relevance of organizational policies and practices for broader public phenomena (e.g., the COVID-19 pandemic). With our study, we therefore aim to shed light on these more distal effects of organizational climate and hope to inspire future research on the

role of organizations in tackling public challenges. Second, building on self-perception theory (Bem, 1972), we propose and test a new underlying mediating mechanism for the relationship between perceived organizational climate and employees' attitude. Identifying mediators for the effects of perceived organizational climate on more distal outcomes (i.e., vaccine readiness) is vital to enhance our theoretical understanding of the effects of organizational climate on employees' attitudes and what is necessary for these effects to unfold. Finally, our research highlights the role of organizations in overcoming global public health challenges like the COVID-19 pandemic.

THEORETICAL BACKGROUND AND HYPOTHESES

Organizations are relevant for their employees' attitudes and behavior for several reasons: (a) Employees spend a large amount of their time at work, (b) they typically identify with their organizations, and (c) they are susceptible to the influence of their organization, their supervisors, and coworkers (Kuenzi & Schminke, 2009; Norton et al., 2014). Consequently, organizations have a high potential to affect their employees' attitudes and behavior both within and outside work. A framework to bundle and examine these influences of organizations, supervisors, and coworkers on employees' attitudes and behavior is organizational climate, which is defined as employees' perceptions of the organizational practices, policies, and procedures that are supported and expected within the workplace (Schneider et al., 2013, 2017).

Building on signaling theory (Connelly et al., 2011) and social exchange theory (Emerson, 1976), it is assumed that organizational policies and practices signal to employees which types of behavior are valued and expected by their organization. Employees then, in turn, should implement the types of behavior that they perceive as being valued by their organization in expectation of social reward (e.g., esteem, promotion; Baran et al., 2012). Therefore, organizational policies and practices should have a direct effect on employees' behavior inside and outside work. Effects of different types of organizational climate have been shown in many domains of employee behavior, especially on behavior shown at work. Regarding safety climate, a meta-analysis showed that an organization's safety climate (and employees' perceptions thereof) is positively related to employees' safety behavior (i.e., safety compliance and safety participation) while at work (Clarke, 2010). Studies also found that a safety climate is positively related to hygiene routines (i.e., handwashing, facial protective equipment) in hospitals (Larson et al., 2000; Rozenbojm et al., 2015). Furthermore, perceptions of other types of health-related climates (i.e., organizational health behavior climate) have been found to relate to employees' health behavior and well-being (Kaluza et al., 2020; Sonnentag & Pundt, 2016). However, although there is first evidence that organizational climate can also affect employee behavior in nonwork settings (e.g., Sonnentag & Pundt, 2016), it is still unclear how far the effects of organizational climate reach into employees' nonwork life.

In recent years, organizations had been challenged to establish (and dynamically adapt) a COVID-19-related safety climate. However, organizations have responded differently regarding the timing and scope of their policies and practices to mitigate the impact of the pandemic. Employee perceptions of these safety policies and practices constitute the organization's COVID-19 safety climate. Recent studies indicate that employees' perceptions of this type of safety climate are associated with employees' adherence to COVID-19 guidelines (Bazzoli &

Probst, 2022; Hubert et al., 2022). These results suggest that organizations are a powerful lever for promoting employees' adherence to COVID-19 guidelines.

A self-perception theory perspective

In our research, we extend these studies by arguing that an organization's COVID-19 safety climate is not only a predictor of focal behavior (adherence to COVID-19 guidelines at work) but also affects employees' COVID-19 vaccine readiness as a more distal outcome. We assume that if employees perceive that their organization values safety in times of the pandemic, they are more likely to develop positive attitudes toward vaccination against COVID-19. Furthermore, we assume that the effect of COVID-19 safety climate on vaccine readiness is driven by adherence to COVID-19 guidelines. This assumption can be derived from self-perception theory (Bem, 1972), which posits that people infer their attitudes, beliefs, and values by observing their own behavior. To illustrate, if someone regularly buys organic products and avoids using chemicals, they will be likely to perceive themselves as an environment-friendly person. Self-perception theory has been applied to a range of organizational contexts. For example, it has been found that the effects of successful female role models (e.g., Hillary Clinton) on women's self-evaluated leadership performance were mediated by speaking time in a leadership task (Latu et al., 2013). Thus, in line with self-perception theory, women used their behavior as a cue to evaluate their performance.

In this paper, we use self-perception theory (Bem, 1972) to examine the effects of perceived organizational COVID-19 safety climate on employees' attitudes toward COVID-19 vaccination. In particular, we argue that if employees perceive that their organizations value safety during the pandemic, they will be more likely to adhere to COVID-19 guidelines during their working time, which, in turn, increases their self-perceptions of taking COVID-19 and measures to prevent its spread seriously. Hence, they should develop positive attitudes toward COVID-19 vaccination. In other words, we propose that employees, at least partially, infer their attitudes toward COVID-19 vaccination from observing how strictly they adhere to COVID-19 guidelines while they are working. In conclusion, we hypothesize that perceived organizational COVID-19 safety climate increases employees' adherence to COVID-19 guidelines (as already shown by Hubert et al., 2022), which, in turn, increases employees' COVID-19 vaccine readiness. Our conceptual model is illustrated by Figure 1.

In sum, our study aimed to test two hypotheses:

> **Hypothesis 1.** Perceived COVID-19 safety climate is positively related to employees' COVID-19 vaccine readiness.

> **Hypothesis 2.** The positive effect of perceived COVID-19 safety climate on COVID-19 vaccine readiness is mediated by employees' adherence to COVID-19 guidelines in the work context.

In our study, we tested these hypotheses by using a time-lagged design over the course of 1 year. Specifically, we examined whether perceived COVID-19 safety climate at the start of the pandemic (April 2020, when no vaccines were available) predicts COVID-19 vaccine readiness more than 1 year later and whether this effect is mediated by employees' adherence to COVID-19 guidelines in the work context.

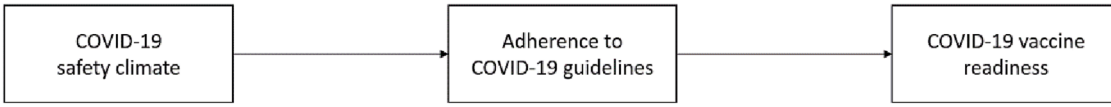

FIGURE 1 Conceptual model of how organizations affect their employees' vaccine readiness. [Color figure can be viewed at wileyonlinelibrary.com]

METHOD

All data, analysis codes, and materials are available on the Open Science Framework (https://osf.io/t8nd3/?view_only=724226b8c3844c64beb086b97cd4ef10). Data were analyzed using R, version 4.1.0 (R Core Team, 2021), and the lavaan package (Rosseel, 2012). The study was approved by the first author's local ethics committee.

Sample and procedure[1]

Participants were recruited via the crowdsourcing platform Prolific. Applying the built-in prescreeners of Prolific, we only invited employees to our study who lived and worked in the United Kingdom, worked at least part-time (i.e., 19 h per week) and were not self-employed (i.e., employees of an organization). The study was advertised as a study on organizational climate and behavior. Participants were instructed to answer several questions on their attitudes and behavior and their experiences with their organization. We collected data from 351 participants in the first wave of measurement (T1), conducted between April 20 and April 25, 2020. Data of the second wave of measurement (T2) were collected over a year later between June 7, 2021, and June 19, 2021 ($N = 254$). Ninety-seven participants of the first measurement point did not respond to several invitations to participate at the second measurement point. Of the 254 participants who responded to the invitation, three participants failed the attention check, and nine participants did not answer all the questions in the questionnaire, which resulted in 242 participants at the second measurement point. Due to the moderate amount of attrition, we followed recommendations by Newman (2014) and estimate missing values using the full information maximum likelihood method (FIML). Therefore, the data of 351 participants who participated in the first measurement point and 242 participants who participated in the second measurement point remained for analysis. Participants received approximately $12 for participation at both measurement points. In the sample, 59.2% were female ($N = 205$), 40.2% were male ($N = 139$), and two participants (0.5%) identified with neither binary gender group; the mean age was 41 years ($SD = 11$), and participants worked on average 35.6 h ($SD = 7.9$) per week. The most often reported highest educational degree was a bachelor's degree (38.4%, $N = 135$), followed by a master's degree (18.5%, $N = 65$) and further vocational qualifications (15.9%, $N = 56$). Further, most of our participants reported working in a white-collar job (71.5%, $N = 251$).

Because of our rather long interval between measurement points, we observed a moderate attrition rate and therefore conducted a dropout analysis to test whether there was any indication of biases in our sample. More specifically, we conducted *t*-tests and chi-squared tests,

respectively, to test for differences in the demographics (i.e., age, gender, highest educational degree) and the perceived COVID-19 safety climate between participants of both measurement points and participants who only provided answers at the first measurement point. Results of these group comparisons showed that participants who answered the questionnaire at both measurement points were on average 4.5 years older than participants who responded only at T1, $t(202.9) = -3.75$, $p < .001$. In contrast, for gender, $\chi^2(1, N = 351) = 0.57$, $p = 0.45$, education, $t(157.32) = -0.99$, $p = .32$, and perceived COVID-19 safety climate, $t(167.41) = 0.65$, $p = .51$, there was no difference between both groups.

Measures

COVID-19 safety climate

For the assessment of organizational COVID-19 safety climate, we used a seven-item measure developed by Hubert et al. (2022) (sample item: "My organization offers support and provides me with equipment to deal with the circumstances resulting from the coronavirus pandemic"; 6-point scale with *1 = absolutely not true*; *6 = absolutely true*). The scale's reliability was $\alpha = .92$.

COVID-19 vaccine readiness[2]

To assess COVID-19 vaccine readiness, we focused on two components of the 5C model of vaccine readiness (Betsch et al., 2018): confidence and collective responsibility. We decided to measure confidence in COVID-19 vaccines, because this is a core feature of most existing measures of vaccine readiness (e.g., Gilkey et al., 2014; Shapiro et al., 2018). The confidence scale consisted of three items (sample item: "I am confident that the COVID-19 vaccine is safe"; 7-point scale with 1 = *strongly disagree*; 7 = *strongly agree*) and had a reliability of $\alpha = .91$. To go beyond confidence, we also measured collective responsibility, which refers to a willingness to protect others with one's own vaccination (Betsch et al., 2018). We decided to do so because there is evidence that prosocial concerns relate to willingness to be vaccinated (Böhm & Betsch, 2022). The collective responsibility scale consisted of three items (sample item: "I get vaccinated against the coronavirus because I can also protect people with a weaker immune system"; 7-point scale with 1 = *strongly disagree*; 7 = *strongly agree*) and had a reliability of $\alpha = .79$.

Adherence to COVID-19 guidelines

We used a measure developed by Hubert et al. (2022) to assess how strictly participants adhered to COVID-19 guidelines at their workplace. Importantly, because the governmental guidelines changed over the course of our study (i.e., mandatory use of face coverings), we decided to add one additional item ("I strictly wear a face covering when I am at work.") at the second measurement point. The measure therefore consisted of nine items at the first measurement point and 10 items at the second measurement point (sample item: "I reduce social contacts at work

to the bare minimum"; 5-point scale with 1 = *much less than I should*; 5 = *as often as I should*) with a reliability of $\alpha = .79$ at T1 and $\alpha = .84$ at T2.

Control variables

Because we collected data for the second measurement time when the COVID-19 vaccine was already available to most of the population, we assessed the current vaccination status as a central control variable in our analyses (0 = *yes*; 1 = *no*). Therefore, we report all results with the vaccination status included in the analyses. Moreover, we tested the robustness of our results by controlling for age, gender, and education in supplementary analyses. Importantly, the directions of relationships and levels of significance were similar whether control variables were included or not (for full results, see Tables S1 and S2).

Factorial structure

We conducted multiple confirmatory factor analyses (CFAs) to test the factorial structure of the variables in our study. In the first model, we modeled COVID-19 safety climate at T1 and adherence to COVID 19 guidelines, confidence, and collective responsibility at T2 as four latent variables (four-factor model, $\chi^2(222) = 364.803$, $p < .001$, CFI = .954, TLI = .948, RMSEA = .045). We compared this model against a model in which all items measuring confidence and collective responsibility loaded on one latent variable (three-factor model) and against a model in which all items loaded on one overarching latent variable (one-factor model). Results of chi-squared difference tests showed that the four-factor model had a superior fit to the data than the three-factor model and the one-factor model (all Satorra–Bentler $\Delta\chi^2 > 18.486$, all *p*s < .001).

In a next step, we tested whether our measure of adherence to COVID-19 guidelines had the same factorial structure across both measurement points by testing for metric measurement invariance. Establishing metric measurement invariance is a prerequisite to ensure comparability of adherence at T1 and adherence at T2 (Chen, 2007). In a first step, we specified the configural model that had an acceptable fit to the data, $\chi^2(138) = 250.953$, $p < .001$, CFI = .922, TLI = .912, RMSEA = .048. Subsequently, we specified a model in which the factor loading of each item was constrained to be equal at T1 and T2. Notably, because we added one item (use of face covering) to the measure at T2, we only constrained the loadings of the nine items that were included at both measurement points to be equal over time. The loading of the newly added item was estimated freely. This model had an acceptable fit to the data, $\chi^2(146) = 271.951$, $p < .001$, CFI = .913, TLI = .905, RMSEA = .050. Therefore, metric measurement invariance can be assumed for the adherence to COVID-19 guidelines measure (ΔCFI < −.01; ΔRMSEA < .015; Chen, 2007).

RESULTS

Descriptive statistics are presented in Table 1.

TABLE 1 Means, standard deviations, and correlations of all study variables.

Variable	*M*	*SD*	1	2	3	4	5
1. Safety climate T1	4.50	1.08					
2. Vaccination status T2	0.92	0.27	−.00				
3. Adherence T1	4.60	0.46	.15**	.07			
4. Adherence T2	4.32	0.61	.23**	.23**	.48**		
5. Confidence T2	5.86	1.29	.18**	.56**	.09	.30**	
6. Collective responsibility T2	6.17	1.17	.15*	.63**	.17*	.40**	.74**

Notes: T1 = first measurement wave. T2 = second measurement wave.
Abbreviations: *M*, mean; *SD*, standard deviation.
*$p < .05$, **$p < .01$.

TABLE 2 Organizational COVID-19 safety climate and COVID-19 vaccine readiness.

	Confidence T2			Collective responsibility T2		
Predictor	**Est. (*SE*)**	**Std. est.**	***p***	***b***	***SE***	***p***
(Constant)	2.45 (0.37)	0.38	<.001	2.87 (0.32)	2.45	<.001
Safety climate T1	0.21 (0.06)	0.18	.001	0.17 (0.05)	0.16	.002
Vaccination status T2	2.66 (0.25)	0.56	<.001	2.75 (0.22)	0.62	<.001

Notes: For *Confidence*: $R^2 = .34$. For *Collective responsibility*: $R^2 = .41$. T1 = measurement wave 1. T2 = measurement wave 2.

Vaccine readiness

We conducted linear regression analyses using R 4.1.0 (R Core Team, 2021) to assess the effect of perceived organizational COVID-19 safety climate on confidence and collective responsibility. An overview of the results of this analysis is presented in Table 2. Results showed that organizational COVID-19 safety climate at T1 predicted both confidence in COVID-19 vaccines at T2 ($b = 0.22$; 95% CI = [0.10, 0.35]) and collective responsibility at T2 ($b = 0.17$; 95% CI = [0.06, 0.30]). Thus, Hypothesis 1 is supported by our analyses.

Mediation analysis

Next, we tested Hypothesis 2 stating that the effect of COVID-19 safety climate on COVID-19 vaccine readiness is mediated by adherence to COVID-19 guidelines. We assessed the indirect effects in a multivariate path model with both confidence and collective responsibility as outcome variables using the R package lavaan (Rosseel, 2012). To account for the temporal order of the variables in the mediation model, we controlled for adherence to COVID-19 guidelines at T1 in this analysis. We therefore tested whether COVID-19 safety climate at T1 predicted adherence to COVID-19 guidelines (while controlling for adherence to COVID-19 guidelines at T1) and, in turn, COVID-19 vaccine readiness (while also controlling for COVID-19 guidelines at

TABLE 3 Estimates of the path model.

	Adherence T2			Confidence T2			Collective responsibility T2		
Predictor	Est. (*SE*)	Std. est.	*p*	Est. (*SE*)	Std. est.	*p*	Est. (*SE*)	Std. est.	*p*
(Constant)	1.13 (0.39)	3.32	.001	1.71 (0.97)	1.35	.077	1.32 (0.76)	1.16	.083
Org. climate T1	0.08 (0.03)	0.14	.017	0.18 (0.08)	0.15	<.001	0.11 (0.06)	0.11	.064
Adherence T1	0.59 (0.09)	0.45	<.001	−0.14 (0.23)	−0.05	.557	−0.04 (0.18)	−0.02	.801
Adherence T2				0.39 (0.17)	0.19	.025	0.52 (0.14)	0.28	<.001
Vaccination status T2				2.50 (0.37)	0.53	<.001	2.50 (0.34)	0.59	<.001

Notes: T1 = measurement wave 1. T2 = measurement wave 2.

T1). The 95% confidence intervals for indirect effects were calculated using a 5000-sample bootstrap analysis.

As predicted, adherence to guidelines at the second measurement point mediated the effect of COVID-19 safety climate at the first measurement point on both confidence (indirect effect = 0.03, 95% CI = [0.001; 0.08]) and collective responsibility in COVID-19 vaccines (indirect effect = 0.04, 95% CI = [0.01; 0.09]) at the second measurement point. Table 3 shows all estimates. Figure 2 shows the mediation model including standardized estimates.

Exploratory analyses

Although effects of organizational climate have typically been investigated as main effects, it is plausible that interindividual differences moderate such effects. For example, some individuals might have a strong preexisting opinion on certain topics such as vaccination and might therefore be less susceptible to organizational climate. In an exploratory analysis, we therefore included an interaction term of COVID-19 safety climate and vaccination status as a predictor of COVID-19 vaccine readiness.[3] Results of this analysis showed that vaccination status moderates the relationship between COVID-19 safety climate and COVID-19 vaccine readiness (for confidence: $b = 0.21$, $SE = 0.004$, $p < .001$; for collective responsibility: $b = 0.11$, $SE = 0.01$, $p < .001$). Subsequent simple slope analyses showed that COVID-19 safety climate had a significant positive relationship with employees' confidence in COVID-19 vaccines ($b = 0.29$, $SE = 0.06$, $p < .001$) and feelings of collective responsibility regarding COVID-19 vaccines ($b = 0.22$, $SE = 0.05$, $p < .001$) when employees were vaccinated. Conversely, this relationship turned negative for unvaccinated employees (for confidence: $b = -0.67$, $SE = 0.34$, $p = .048$; for collective responsibility: $b = -0.65$, $SE = 0.32$, $p = .042$). This interaction is illustrated in Figure 3.

DISCUSSION

Although politicians and media have been considered crucial factors in promoting COVID-19 vaccine readiness (Chevallier et al., 2021), almost nothing is known about whether

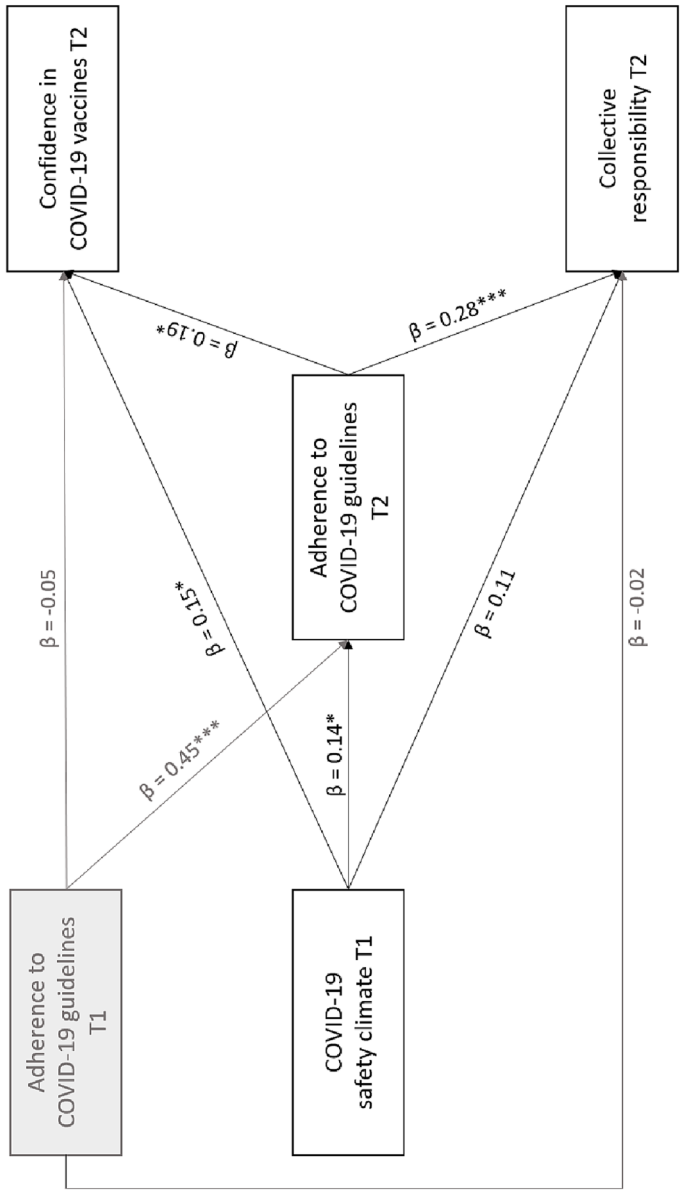

FIGURE 2 Path model showing the influence of COVID-19 safety climate on adherence to COVID-19 guidelines and COVID-19 vaccine readiness. *Note:* All estimates are standardized coefficients. $N = 351$. Control variable: vaccination status. $^{*}p < .05$, $^{***}p < .001$. [Color figure can be viewed at wileyonlinelibrary.com]

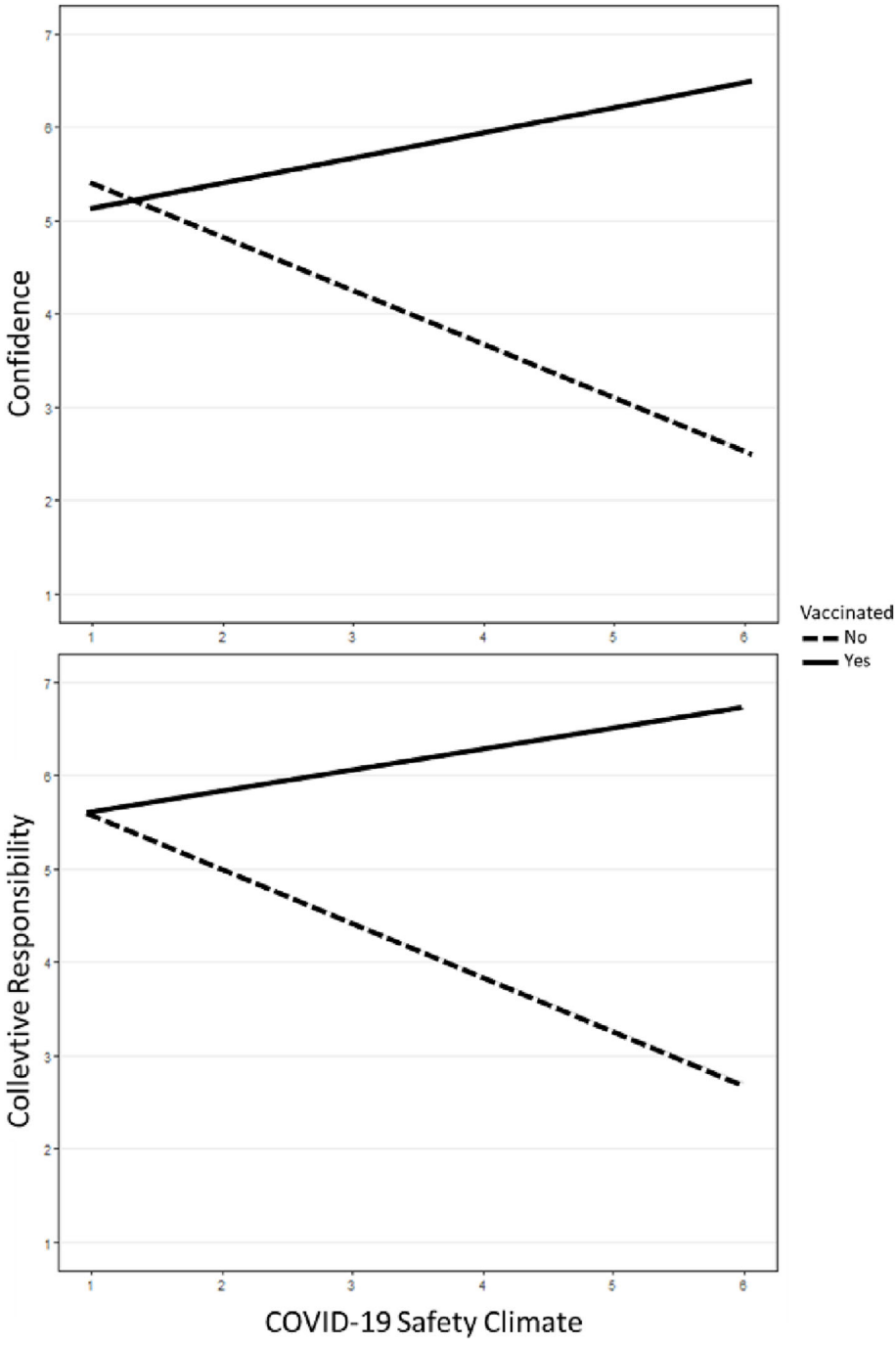

FIGURE 3 Interaction of COVID-19 safety climate and vaccination status in predicting COVID-19 vaccine readiness. [Color figure can be viewed at wileyonlinelibrary.com]

organizations can promote their employees' vaccine readiness. Here, we used a self-perception theory (Bem, 1972) lens to examine the effects of COVID-19 safety climate on employees' attitudes toward vaccination. We hypothesized that perceived COVID-19 safety climate affects employees' COVID-19 vaccine readiness and that this effect is mediated by employees' adherence to COVID-19 guidelines.

The results of our time-lagged study support our hypotheses. Using a UK sample ($N = 242$), our study shows that an organization's perceived COVID-19 safety climate assessed at an early stage of the pandemic (April 2020, when no vaccines were available) predicts employees' COVID-19 vaccine readiness more than a year later (June 2021, when vaccines were available). Our study further provides evidence for the mechanism underlying the effects of organizational COVID-19 safety climate on vaccine readiness. In line with self-perception theory (Bem, 1972), we found that the effect of COVID-19 safety climate on COVID-19 vaccine readiness was mediated by employees' change in adherence to COVID-19 guidelines from T1 to T2.

The present research advances our understanding of both perceived organizational climate and vaccine readiness. First, despite the large amount of literature on organizational climate (for reviews, see Schneider et al., 2013, 2017), research investigating whether perceptions of organizational climate relate to more distal nonwork-related outcomes is still scarce. With our study, we demonstrate that perceived COVID-19 safety climate not only relates to behavior in work settings (i.e., adherence to COVID-19 guidelines at work) but further that these behavioral changes at work can translate into attitude changes in nonwork settings. Our findings therefore extend the literature on organizational climate by providing evidence for the relation between perceived organizational climate with vaccine readiness as a distal nonwork-related outcome variable. Our research thereby sheds light on the so far neglected possible scope of effects of organizational climate.

Second, building on self-perception theory (Bem, 1972), we provide evidence for one explanatory mechanism that accounts for these more distal effects of perceived organizational climate on attitudes regarding nonwork-related topics. Our results show that the effects of organizational climate do not end when employees leave their workplace but can further affect employees' attitudes in their private life. Future research should examine whether this idea also holds for other types of organizational climate, for example, diversity climate (Pugh et al., 2008), innovation climate (West & Anderson, 1996), and psychosocial safety climate (PSC; Hall et al., 2010). Furthermore, our results contribute to research on vaccine readiness by providing first-time evidence that perceived organizational COVID-19 safety policies and measures have an impact on employees' COVID-19 vaccine readiness.

Our results also come with practical implications for the organizational-level and level of public policy. First, we hope that our research encourages organizations to implement relevant policies and procedures that signal their employees that they care for specific behaviors or issues. By fostering an organizational climate that signals to their employees that their health and safety is valued, organizations not only promote their employees' health and safety behavior at work but also in their nonwork life. Furthermore, our results should spur political and nongovernmental actors to seek more collaboration with organizations when addressing public challenges, such as pandemics.

In addition, in an exploratory analysis, we found that the effects of perceived COVID-19 safety climate differ as a function of vaccination status. In our sample, contrary to our overall finding, a subsample of unvaccinated employees showed a negative relationship between

perceived COVID-19 safety climate and vaccine readiness. A possible explanation for this interaction is the emergence of psychological reactance (Brehm, 1966). Thus, it is conceivable that employees who opposed vaccination against COVID-19 felt pressured when they perceived that their organizations expected them to do everything to help slow the spread of SARS-CoV-2. However, it is important to note the negative correlation between perceived COVID-19 safety climate and vaccine readiness found for unvaccinated employees was based on a very small subsample ($n = 18$). Hence, this result may reflect a type I error (i.e., a false positive). Given that this finding was exploratory and was based on a very small sample, we refrain from drawing firm conclusions. Future studies should investigate whether this finding can be replicated in a confirmatory study. If this finding can be replicated, it would have important implications for theory and practice of organizational climate because scholars and practitioners would have to closely consider which employees to address and whether some policies and practices might elicit reactance and, therefore, might even backfire.

Admittedly, it might be argued that there are several other important determinants of COVID-19 vaccine readiness. For example, previous research suggests that variables such as concerns over vaccine safety, efficacy and perceived side effects, misinformation on social media, and trust in science or trust in government (Biswas et al., 2021; Lohmann & Albarracín, 2022; Loomba et al., 2021; Raffetti et al., 2022; Sturgis et al., 2021) are related to COVID-19 vaccine readiness. Furthermore, demographic variables such as age, education, and ethnicity have been found to predict COVID-19 vaccine readiness (e.g., Robertson et al., 2021). Interestingly, there are many people who tend to express low levels of confidence in science and government, particularly in the United States. For example, in June 2022, only about one in 10 Republicans said that they trust the government to do what is right (Pew Research Center, 2022). For exactly those people, other sources of social influence, for example, the organizations for whom they work, may have a far larger impact on their vaccine readiness. Examining this idea is an interesting avenue for future research.

Limitations

Despite the strengths and contributions, there are some limitations of our research. First, even though we used a time-lagged approach in our study, our design is still correlational, which does not allow causal conclusions to be drawn. However, we included the autoregressive effect of adherence to COVID-19 in the analysis to establish temporal precedence in our model. Second, we assessed all variables using self-reports, which holds the risk of common method bias. Another limitation that goes along with the use of self-reports is that people may overestimate their adherence to COVID-19 guidelines (Mojzisch et al., 2022). A further limitation is that we were unable to collect direct evidence for the purported self-perceptions. As these self-perceptions are in general very difficult to assess we think that the use of self-report measures of adherence is a reasonable approximation of self-perceptions regarding adherence to COVID-19 guidelines. To illustrate, answering the self-report item "I reduce social contacts at work to the bare minimum" is basically equal to "I perceive myself to reduce social contacts at work to the bare minimum." Given this limitation, we would only interpret the results of our study as consistent with self-perception theory but not as direct evidence for self-perception theory. Finally, we assessed vaccine readiness only after the COVID-19 vaccine was available and administered to a broader public. Even though we controlled for vaccination status in our analyses, we recommend assessing vaccine readiness prior to actual vaccination in future studies.

Conclusion

In conclusion, our results show that organizations are a powerful lever for promoting COVID-19 vaccine readiness. Hence, from a practical perspective, our results should encourage organizations to continue their COVID-19-related safety policies and measures, depending on the further development of the pandemic, but also in face of new pandemics to come. By doing so, organizations not only protect their employees from exposure to and infection with SARS-CoV-2 but also significantly contribute to increasing their employees' COVID-19 vaccine readiness. They further should sensitize politics and public administration that organizations could be important facilitators to spread health-related information and to affect their employees' health-related attitudes and behavior.

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CONFLICT OF INTEREST STATEMENT

The authors have no conflict of interest to disclose.

DATA AVAILABILITY STATEMENT

All data, analysis codes, and materials are available on the Open Science Framework (https://osf.io/t8nd3/?view_only=21a3ec2051ae4e30a4db34d8e2ccb114).

ETHICS STATEMENT

The study was approved the first author's local ethics committee. We do not reproduce materials from other sources.

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ENDNOTES

[1] Data from the first measurement point are part of a larger research project that investigated effects of COVID-19 safety climate over different time spans. Data from the second measurement point were collected uniquely for this paper.

[2] We were only able to measure COVID-19 vaccine readiness at the second measurement point because in April 2020, when the first measurement point took place, there was no COVID-19 vaccine available, and thus, the assessment of vaccine readiness would have been only hypothetical and uninformed.

[3] We would like to thank an anonymous reviewer for pointing out this possibility and, in particular, for running the analyses based on the data provided in the OSF.

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