The effects of organizational climate on adherence to guidelines for COVID-19 prevention

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ABSTRACT

Background: During the current pandemic, it is essential that individuals follow the COVID-19 guidelines (e.g., physical distancing) to slow down the spread of the new coronavirus. Organizations generally affect their employees' behavior in a wide range of areas, but can they also affect how strictly employees adhere to COVID-19 guidelines? To answer this question, the present study examined the impact of an *organizational climate for preventing infectious diseases* (OCID) on employees' adherence to COVID-19 guidelines both at work and in their private life.
Method: We used a two-wave longitudinal online survey with a final sample of $N = 304$ UK employees.
Results: Our results show that OCID during the first lockdown in the UK in April 2020 (T1) was positively linked to adherence to COVID-19 guidelines at work one month later (T2). We also found a relationship between OCID (T1) and adherence to guidelines in one's private life (T2) that was mediated through adherence to guidelines at work (T2).
Conclusion: These results highlight the pivotal role organizations play in mitigating the COVID-19 pandemic.

Adherence to COVID-19 guidelines is of utmost importance to prevent the spread of the new coronavirus (SARS-CoV-2) alongside vaccination (Cowling and Aiello, 2020; Wilder-Smith and Freedman, 2020). While politicians and media have been considered to be crucial factors to promote adherence to the COVID-19 guidelines (McCloskey and Heymann, 2020; Van Bavel et al., 2020; West et al., 2020), little is known about the impact organizations have on their employees' adherence to these guidelines. Previous literature has shown that organizational climate is a useful framework to understand how organizational measures can alter individual behavior (Kuenzi and Schminke, 2009; Schneider et al., 2013). But can organizations also affect how strictly employees adhere to COVID-19 guidelines?

Using a two-wave study design, the present study examines whether *organizational climate for preventing infectious diseases* (OCID) is positively related to adherence to COVID-19 guidelines at work. Moreover, we test whether OCID is also related to adherence to guidelines in one's private life, and whether this relationship is mediated by adherence at work, in terms of a spillover effect. We adopted existing safety climate scales to form a measure of OCID, and we assessed the effects of OCID on adherence to COVID-19 guidelines of employees at work as defined by the WHO (World Health Organization, 2020) during an early stage of the pandemic.

1. Theoretical background and hypotheses

Organizational climate is defined as "shared perceptions of and the meaning attached to the policies, practices, and procedures employees experience and the behaviors they observe getting rewarded and that are supported and expected" (Schneider et al., 2013, p. 362). Schneider et al. (2013) argued that organizational climate is linked to and shaped by specific measures (e.g., management practices) that organizations take to evoke desired behavior in their employees. According to *signaling theory* (Connelly et al., 2011), such measures can signal to employees that their organization values certain types of behavior. In addition, *social exchange theory* (Emerson, 1976) proposes that employees who perceive certain behaviors as being valued by their organization are more likely to adopt or maintain such behaviors as they expect a positive social return (Baran et al., 2012; Schulz et al., 2017). Following both theories, it is conceivable that organizational measures during the COVID-19 pandemic could signal the value of health to employees. Therefore, OCID might affect adherence to COVID-19 guidelines both at work and in one's private life.

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Previous research confirms the impact of organizational climate on behavioral outcomes, including safety behavior (Griffin and Curcuruto, 2016; Zohar and Luria, 2005), and healthy behavior (Kaluza et al., 2020; Sonnentag and Pundt, 2016). Studies also found that safety climate can increase hygiene routines within hospitals (Larson et al., 2000; Moore et al., 2005; Rozenbojm et al., 2015). Hence, organizational climate can alter the behavior of employees and foster safety and health behavior at the workplace. However, it has not yet been tested whether the effects of organizational climate also apply to behavior change during the current COVID-19 pandemic. Interestingly, in many workplaces the behavior prescribed by the COVID-19 guidelines is completely new and un-learned. Therefore, we deem it important to test whether OCID is positively related to these new types of behavior. Building on previous theory and empirical evidence, we predict that OCID is positively related to adherence to COVID-19 guidelines at the workplace. Hence, we hypothesize:

H1. OCID predicts employees' adherence to the COVID-19 guidelines at work.

An important limitation of organizational climate research is that it typically focuses on behavior at the workplace and, hence, often neglects the impact organizational climate might have on behavior outside the organization's boundaries (for exceptions, see below). For many health-related behaviors and especially during the COVID-19 pandemic, behavioral changes in all domains of life are essential (Van Bavel et al., 2020; West et al., 2020). A few studies provide preliminary evidence for spillover effects from organizational climate to safety (Naveh and Katz-Navon, 2015; Wu et al., 2017), health (Sonnentag and Pundt, 2016), and pro-environmental behavior outside work (Hicklenton et al., 2019). However, it has to be noted that the design of previous studies was either cross-sectional (Hicklenton et al., 2019; Sonnentag and Pundt, 2016; Wu et al., 2017), or spillover effects were reported in retrospective after one year (Naveh and Katz-Navon, 2015).

Additionally, previous literature has not investigated how organizational climate-related behavior at the workplace translates into similar behavior in one's private life. Previous theoretical work emphasizes that work and private behavior are interconnected through certain habits, scripts, and styles (Edwards and Rothbard, 2000). Therefore, it is plausible that during the pandemic certain behaviors that are learned and fostered at the workplace (e.g., physically distancing) turn into (or reinforce) habits or scripts that are transferred to one's private life. Specifically, we proposed an indirect effect of OCID to adherence to COVID-19 guidelines in employees' private life through adherence to COVID-19 guidelines at the workplace. Hence, we hypothesized:

H2. OCID predicts employees' adherence to the COVID-19 guidelines in their private life.

H3. The effects of OCID on employees' adherence to the COVID-19 guidelines in their private life are mediated by employees' adherence to the COVID-19 guidelines at the workplace.

2. Method

2.1. Sample and procedure

We recruited our sample via the panel provider Prolific (www.prolific.co). The study consisted of two waves. The first wave (T1, $N =$ 343 employees living in the UK) was conducted between April 20th and 25th, 2020, that is, after the pandemic hit the UK, and while first COVID-19-related lockdown regulations were in effect. The second wave (T2) was conducted about one month later, that is, between May 18th and 22nd, 2020, one week after the partial relaxation of the lockdown in the UK. Inclusion criteria were (a) working at least part-time (19.5 h per week), and (b) working for an organization (no self-employment). The survey was administered via the online survey tool SoSci Survey (Leiner, 2019).

For our analyses, we included only participants who took part in both waves and fulfilled our pre-screening criteria ($N = 304$). Four participants had to be excluded, as they failed to answer attention check questions correctly. The final sample included 181 female (59.5%), 121 male (39.8%) and 2 other (0.7%) participants. Mean age was 41.44 ($SD = 11.67$) years. Participants worked for an average of 34.19 h per week ($SD = 10.27$). Further demographics are displayed in Table 1. There was no missing data because we used forced choice answering formats in our questionnaire.

2.2. Measures

2.2.1. Organizational climate for preventing infectious diseases

Our seven-item measure to assess OCID was adapted from existing safety climate scales (Neal and Griffin, 2006; Zohar and Luria, 2005) to COVID-19-specific measures on a six-point scale (e.g., "My organization offers support and provides me with equipment to deal with the circumstances resulting from the coronavirus pandemic", 1 = *absolutely not true*, 6 = *absolutely true*). A Confirmatory Factor Analysis (CFA) revealed a one-factorial structure that provided good fit to the data ($N = 304$; $\chi^2 = 1390.220$, df = 21, p < 001, Comparative Fit Index (CFI) = 99, Root mean square error of approximation (RMSEA) = 044 Standardized root mean square residual (SRMR) = 024 = 91)

Table 1

Means, Standard Deviations, Frequencies and Percentages for all measured constructs.

Variable	M	SD	Frequency	Percentage
T1 - OCID	4.48	1.07		
T2 - OCID	4.51	1.10		
T1– adherence to COVID-19 guidelines at work	4.60	0.45		
T2– adherence to COVID-19 guidelines at work	4.52	0.48		
T1 - adherence to COVID-19 guidelines in private life	4.44	0.47		
T2 - adherence to COVID-19 guidelines in private life	4.37	0.47		
Age	41.44	11.67		
Gender				
Female	–	–	179	58.88
Male	–	–	123	40.46
Unknown	–	–	2	0.66
Education				
secondary education	–	–	39	12.83
further education - academic qualifications	–	–	34	11.18
further education - vocational qualifications	–	–	47	15.46
Bachelor	–	–	113	37.17
Master	–	–	56	18.42
Ph. D.	–	–	13	4.28
Other	–	–	2	0.66
Income Level				
under 5000 £	–	–	1	0.33
5000 £ to 10,000 £	–	–	5	1.64
10,000 £ to 20,000 £	–	–	32	10.53
20,000 £ to 30,000 £	–	–	59	19.41
30,000 £ to 40,000 £	–	–	68	22.37
40,000 £ to 50,000 £	–	–	44	14.47
50,000 £ to 60,000 £	–	–	29	9.54
60,000 £ to 70,000 £	–	–	24	7.89
70,000 £ to 80,000 £	–	–	15	4.93
80,000 £ to 90,000 £	–	–	5	1.64
90,000 £ to 100,000 £	–	–	14	4.61
over 100,000 £	–	–	8	2.63

Note. T1 represents the first wave of our study from the 20th to April 25, 2020, T2 represents the second wave of our study from the 18th to the 22nd of May 2020. *M* and *SD* are used to represent mean and standard deviation, respectively.

2.2.2. Adherence to COVID-19 guidelines

Building on the WHO guidelines (World Health Organization, 2020), we asked participants to report how strictly they adhered to the COVID-19 guidelines both at work (α = .73, e.g., "I reduce social contacts at work to the bare minimum", 9 Items) and in their private life (α = .74, e.g., "I reduce social contacts in private to the bare minimum", 12 Items). Both measures used a five-point Likert scale (1 = *much less than I should*, 5 = *as often as I should*).

All materials, questionnaires, data, and scripts are available as an OSF project (https://osf.io/5s4vr/?view_only=6fee446db2fc4144 bf7f87420c779389).

2.3. Analytic approach

To test our hypotheses, we applied path analyses using R (R Core Team, 2020) and the lavaan package (Rosseel, 2012). In the first step, we entered T1-OCID as a predictor variable, and (i) T2-adherence at work as well as (ii) T2-adherence in one's private life as two simultaneous outcome variables. We also included the T1-adherence variables as control variables. In a second step, we added all remaining paths needed to test for a mediating effect of T1-OCID on T2-adherence in one's private life through T2-adherence at work (Hayes, 2013). All hypotheses were tested at $p < .05$ (two-tailed).

We recruited our participants from an existing pool of N = 400 employees whom we had tested in an earlier study with an unrelated topic. Therefore, the maximum sample size was restricted. Hence, we refrained from conducting an a-priori power analysis; instead, we conducted a sensitivity analysis. This analysis revealed that our final sample size at T2 of N = 304 employees allows for detecting small effects ($f^2 < 0.03$) in the relationship between OCID and adherence at work (H1) and in private (H2), with alpha = .05 and a power of .90 which has been considered a conventional value for high test-power in previous research (Faul et al., 2007; Mead et al., 2002; Perugini et al., 2018). It is also sufficient to detect small effects ($f^2 > 0.04$) for the proposed mediation (H3) with a power of .90. In sum, our study was well-powered to detect the predicted relationships. Correlations between all study variables are displayed in Table 2.

3. Results

3.1. Hypotheses testing

Correlations between all study variables are displayed in Table 2.

To test Hypotheses 1 and 2, we simultaneously tested the effect of T1-OCID on T2-adherence at work and in private while controlling for adherence at T1 using path analysis. The analyses showed that T1-OCID was predictive for T2-adherence to COVID-19 guidelines both at work

Table 2
Correlations with confidence intervals for all measured constructs.

Variable	1	2	3	4	5	6
1. T1 – OCID						
2. T2 – adherence to COVID-19 guidelines at work	.22**					
3. T2 – adherence to COVID-19 guidelines in private life	.18**	.59**				
4. Age	.00	.06	.11			
5. Sex	-.01	-.15**	-.15**	.00		
6. Income	.19**	.13*	.05	-.03	-.02	
7. Education	.03	.05	-.08	-.17**	.01	.25**

Note. T1 represents the first wave of our study from the 20th to April 25, 2020, T2 represents the second wave of our study from the 18th to the 22nd of May 2020. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. * indicates $p < .05$. ** indicates $p < .01$.

(*beta* = 0.14, $p = .006$) and in one's private life (*beta* = 0.12, $p = .007$), hence supporting Hypothesis 1 and Hypothesis 2. Results are displayed in Table 3.

Moreover, we hypothesized an indirect effect of T1-OCID on T2-adherence to COVID-19 guidelines in one's private life through T2-adherence at work (Hypothesis 3). We tested the significance of the indirect effect using bootstrapping. Unstandardized indirect effects were computed for each of the 1000 bootstrapped samples (Hayes, 2009), and the 95% confidence interval was computed by determining the indirect effects at the 2.5th and 97.5th percentiles. The bootstrapped unstandardized indirect effect was 0.02 [95% CI: 0.01; 0.03] and statistically significant ($p = .009$). As predicted, T1-OCID was positively related to T2-adherence to COVID-19 guidelines at work, which in turn showed a positive relationship with T2-adherence to COVID-19 guidelines in employees' private life. As predicted, the effect from T1-OCID on T2-adherence to COVID-19 guidelines in employees' private life was fully mediated through adherence to guidelines at work. Results are displayed in Fig. 1.

To check for the robustness of our results, we reran our analyses while including age, sex, income, and level of education as control variables. This did not change the pattern of results.

4. Discussion

In this paper, we proposed that organizations can play a pivotal role in mitigating the COVID-19 pandemic. In particular, we hypothesized that an organizational climate that values safety in times of the pandemic (i.e., OCID) increases employees' adherence to COVID-19 guidelines both at work and in their private life.

As predicted, OCID during the first lockdown in the UK in 2020 was related to a stricter adherence to COVID-19 guidelines both at the workplace and in individuals' private life about one month later (i.e., one week after the easing of the lockdown), thereby confirming Hypothesis 1 and 2. Furthermore, a mediation analysis provided evidence for Hypothesis 3, suggesting an indirect effect of OCID on adherence in one's private life through adherence at work.

4.1. Theoretical implications

Our results are in line with previous theorizing on organizational safety and health climate (Naveh and Katz-Navon, 2015; Schneider et al., 2013; Schulz et al., 2017; Zohar and Luria, 2005). At the same time, our results extend the potency of such an organizational safety and health climate during a pandemic as a crucial part of COVID-19 health management. The longitudinal relationship between OCID and adherence to guidelines during the early stages of the COVID-19 pandemic should encourage organizations to see themselves as a vital part in fighting the pandemic.

On a broader theoretical level, our study advances research on organizational climate by showing that organizational climate can influence behavior in individuals' private life through adopting this type of behavior at work. Although spillover effects have been found in earlier research (Hicklenton et al., 2019; Naveh and Katz-Navon, 2015; Sonnentag and Pundt, 2016; Wu et al., 2017), the mechanism underlying the effect of organizational climate on behavior in individuals' private life remained unclear. Specifically, extending previous studies, we predicted and showed that the spillover effect from organizational climate on employees' behavior in their private life was mediated by the same behavior at the workplace. Hence, the present study is the first to show that the organizational climate to private behavior spillover effect is mediated through behavior at work. This finding is in line with theory (Edwards and Rothbard, 2000) that suggests that organizational climate fosters the acquisition of behavioral scripts and routines at the workplace which then become effective in employees' private life.

A caveat of our findings is that the direct and indirect effect sizes found in the present study are rather small. However, it is important to

Table 3
Results of the path analysis.

Predictor	T2-Adherence at work					T2-Adherence in private life				
	b	Std. Err.	95%CI	β	p	b	Std. Err.	95%CI	β	p
T1-OCID	0.06**	0.02	[0.02, 0.11]	.14	.006	0.05**	0.02	[0.01, 0.09]	.12	.007
T1-Adherence at work	0.66***	0.05	[0.57, 0.76]	.61	<.001	–	–	–	–	
T1-Adherence in private life	–	–	–	–		0.69***	0.05	[0.59, 0.80]	.69	<.001
R^2	.42					.50				

Note. A significant *b*-weight indicates the semi-partial correlation is also significant. *b* represents unstandardized regression weights. *β* represents the standardized regression weights. T1 represents the first wave of our study from the 20th to April 25, 2020, T2 represents the second wave of our study from the 18th to the 22nd of May 2020. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval. * indicates $p < .05$. ** indicates $p < .01$. *** indicates $p < .001$.
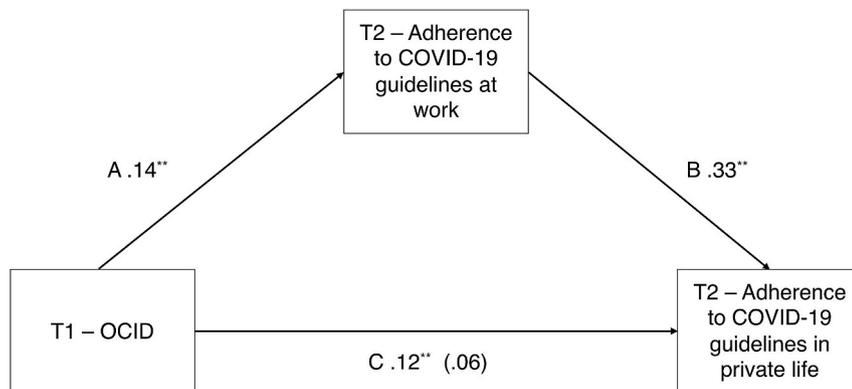

Fig. 1. Standardized coefficients and levels of significance of our mediation analysis.
Note. T1 represents the first wave of our study from the 20th to April 25, 2020, T2 represents the second wave of our study from the 18th to the 22nd of May 2020. Values displayed represent standardized coefficients. Value in parentheses indicates standardized coefficient for the direct effect of T1-OCID on T2- Adherence in private life when including the indirect effect viaT2-Adherence at work. * indicates $p < .05$. ** indicates $p < .01$. *** indicates $p < .001$.

note that the COVID-19 pandemic is probably the most publicly (and globally) recognized health-threatening event in the last decades. As a consequence, in most countries, there are ubiquitous reminders of behavioral guidelines to prevent the spread of the new coronavirus (e.g., signs, media messages). Therefore, we might expect that the awareness of the public guidelines to prevent the spread of the virus is already very strong (Park et al., 2020). Moreover, social cognitions, for example, social norms, have been identified to predict preventive behavior, such as social distancing (Hagger et al., 2021). Hence, our study can be considered a strong (i.e., conservative) test of the effects of organizational climate. Our longitudinal results imply that OCID indeed explains additional variance above the "noise" of other measures (e.g., signs, media messages). As we controlled for adherence behavior at T1, our results suggest that OCID explains a small, yet significant positive tendency towards stronger adherence during the COVID-19 pandemic. Remarkably, our results show that adherence to COVID-19 guidelines at the workplace can spill over into employees' private life. Even though these effects are small, if applied to an entire population, they may translate into considerable societal-level effects regarding the adherence to COVID-19 guidelines.

4.2. Limitations

There are some limitations and avenues for future research. First, adherence to COVID-19 guidelines was measured using self-reports. Although there is preliminary evidence showing a good validity of self-report measures in terms of high correspondence with actual behavior (Gollwitzer et al., 2021), people might overestimate their adherence to the guidelines, at least when comparing their own adherence with the adherence of others (Mojzisch et al., 2021). Hence, future research should assess adherence to COVID-19 guidelines more objectively, for example, by using smartphone data (Huckins et al., 2020). Second, whether participants did or did not wear a face-mask was not part of our initial survey because in the early stages wearing a face mask was not part of official COVID-19 guidelines in the UK where the study

was conducted (Greenhalgh et al., 2020; Worby and Chang, 2020).

A third limitation of our study is that our survey was conducted in the UK only in a particular time frame in a dynamically changing global crisis. Future studies should examine the impact of OCID in countries with different policies regarding COVID-19 guidelines.

5. Conclusion

The key practical implication of our study is that organizations can positively influence their employees' adherence to COVID-19 guidelines by cultivating a climate that effectively integrates aspects of information and communication, providing equipment, and management values. As our results show, this effect is also likely to translate into similar behavior in one's private life. Thus, our research demonstrates that organizational climate can affect how strictly people adhere to the COVID-19 guidelines in their private life, thereby highlighting the pivotal role of organizational climate in a once in a lifetime crisis. In conclusion, we hope that our results will spur organizations to see themselves as a vital part in fighting the current pandemic.

Credit author statement

PH, SAH, AM, and JAH planed the study. PH and SAH collected the data. PH analyzed the data. PH, SAH, AM, and JAH wrote the paper.

Ethics approval

This research was approved by the IRB of the University of Hildesheim.

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