

Work and Non-Work Sickness Presenteeism

The Role of Workplace COVID-19 Climate

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Objective: To test the role of workplace coronavirus disease (COVID-19) climate in shaping employee attitudes toward the CDC prevention guidelines and subsequent levels of work and non-work sickness presenteeism. **Methods:** Three waves of anonymous survey data were collected in October and December 2020 and February 2021. Participants were 304 employed adults in the U.S., of whom half were working onsite. **Results:** Time 1 workplace COVID-19 climate was positively associated with Time 2 employee attitudes toward the CDC prevention guidelines, which in turn predicted Time 3 levels of non-work and work sickness presenteeism. **Conclusions:** The workplace can shape employee attitudes toward the CDC COVID-19 prevention guidelines and their work and non-work sickness presenteeism, thus highlighting the important role companies have in reducing community spread of the novel coronavirus in work and non-work settings.

Keywords: COVID-19, organizational climate, sickness presenteeism

For decades, the medical community has warned of the dangers posed by emerging infections and the possibility of global pandemics.¹ The widespread outbreak of the coronavirus disease (COVID-19) caused by the novel SARS-CoV-2 virus has “surpassed many of the warnings”²; indeed, as of late March 2021, the respiratory disease had reached nearly every country across all continents. With cases reaching 134 million worldwide (and 31 million in the U.S. alone), COVID-19 has caused twin global public health and economic crises³ and has posed critical challenges in its containment. Lacking pharmaceutical agents effective in preventing or treating the disease, the medical and public health community made an unprecedented push for vaccine development⁴ that has since resulted in the approval and distribution of a number of vaccines.

Nevertheless, until widespread vaccination occurs along with the eventual hoped-for development of herd immunity, non-pharmaceutical interventions (eg, mask wearing, social distancing, hand

washing, etc) described in the CDC’s COVID-19 prevention guidelines⁵ are of critical importance in reducing the spread of the virus and reducing the chances of more contagious and/or lethal variants of the virus from developing. Of paramount importance, there is a need for people to stay home from work and refrain from other activities outside the home while sick or exposed to reduce the transmission of COVID-19. While many asymptomatic individuals unwittingly transmit the virus to others, there is also evidence that some individuals continue to work⁶ while knowingly sick or exposed (work sickness presenteeism) and continue to engage in activities outside one’s home, such as going to the grocery store, gym, or other indoor spaces⁷ where there is a higher risk of virus transmission (non-work sickness presenteeism).

Indeed, sickness presenteeism has long been an issue that workplaces and public health officials have grappled with.⁸ Pre-COVID-19, substantive evidence has suggested working while unwell can hinder recovery and increase the risk of future illness and sick leave.⁹ Presenteeism can also negatively impact productivity and cause errors, accidents, and injuries to not only the employee, but also coworkers and the public.^{10,11} Yet, the current stakes are much greater given the higher lethality of the SARS-CoV-2 virus compared to the common cold or flu.⁴ The pandemic may also have intensified many of the known risk factors of presenteeism,¹² including having a pre-existing poor sick record (eg, due to a chronic health condition), financial concerns, and job insecurity. Moreover, pandemic-driven increases in workload pressures, working hours, job stressors, and covering for ill or vulnerable coworkers not only heighten the risk of presenteeism, but also future health issues.¹³

The current study responds to the JOEM call for health and productivity research to better understand the bridge between business practices and community health outcomes. Specifically, our study assessed the link between workplace COVID-19 climate and its potential impacts on risk factors of continued community spread of SARS-CoV-2 (namely, employee attitudes toward the CDC COVID-19 prevention guidelines and work and non-work sickness presenteeism). Toward that end, we first examine the incidence of work and non-work sickness presenteeism defined, respectively, as knowingly going to work or other non-work indoor public spaces while sick or exposed. Additionally, we investigate how employee attitudes toward the CDC COVID-19 prevention guidelines impact those behavioral decisions. Finally, we evaluate the role of workplace COVID-19 practices and policies aimed at reducing the risk of COVID-19 transmission (ie, the workplace COVID-19 climate) in shaping such employee attitudes and subsequent levels of work and non-work sickness presenteeism.

Using three waves of survey data from U.S. working adults, and drawing from the well-validated psychological theory of planned behavior,^{14,15} we test a model linking workplace COVID-19 climate with subsequent employee attitudes toward the CDC COVID-19 prevention guidelines, and their later enactment of both work and non-work sickness presenteeism. The theory of planned behavior^{16,17} stipulates an individual’s behavior is driven primarily by that individual’s attitudes toward the behavior and the subjective norms related to that behavior to which they are exposed.

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Data were collected anonymously as part of a larger project (classified as exempt by Washington State University’s Human Research Protection Program, IRB #18240) examining the impact of COVID-19 on work- and life-related outcomes. All participants provided their informed consent prior to participation in each survey wave.

The authors report no conflicts of interest.

Clinical significance: The workplace can shape employee attitudes toward the CDC COVID-19 prevention guidelines and their work and non-work sickness presenteeism, thus highlighting the important role companies have in reducing community spread of the novel coronavirus in work and non-work settings.

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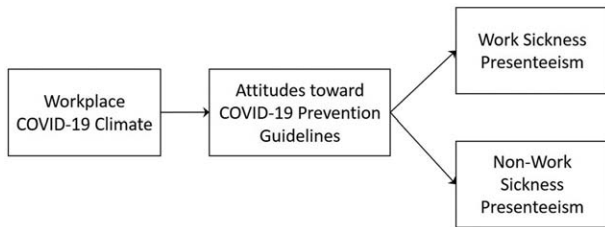


FIGURE 1. Proposed model.

Organizational climate refers to employee perceptions of the organizational policies, practices, and procedures that are rewarded and enforced within the workplace.¹⁸ While various climate referents can exist within an organizational setting (eg, diversity climate, customer service climate, information security climate), a large body of research has demonstrated that climate is predictive of numerous organizationally relevant domain-specific outcomes (eg, safety climate consistently predicts employee safety attitudes and behaviors^{19,20}). In a similar fashion, we argue that for the past year employees have been exposed on a regular basis to the subjective norms of an organization regarding the extent to which workplace behaviors aimed at preventing COVID-19 transmission are encouraged, rewarded, and valued. Moreover, we hypothesize that these workplace norms which constitute the workplace COVID-19 climate can impact the development of worker attitudes toward the CDC COVID-19 prevention guidelines, and employees’ subsequent enactment of sickness presenteeism both in and outside of the workplace. Figure 1 graphically depicts the proposed model and our three hypotheses:

Hypothesis 1. Workplace COVID-19 climate will be positively associated with employee attitudes toward the CDC COVID-19 prevention guidelines.

Hypothesis 2. Attitudes towards the CDC COVID-19 prevention guidelines will be negatively associated with work and non-work sickness presenteeism.

Hypothesis 3. Attitudes toward the CDC COVID-19 prevention guidelines will mediate the impact of COVID-19 climate on work and non-work sickness presenteeism.

METHOD

Participants and Procedure

Data were collected as part of a larger project (classified as exempt by Washington State University’s Human Research Protection Program, IRB #18240) examining the impact of COVID-19 on work- and life-related outcomes. Participants were recruited to complete anonymous online surveys via U.S.-based Amazon Mechanical Turk (MTurk) at three time points in October and December of 2020, and February of 2021. To qualify, MTurk workers were required to (1) work outside of the MTurk platform for 20 or more hours per week and report to a direct supervisor, (2) have completed at least 100 prior tasks and have approval rating of 90% or greater on the MTurk platform,²¹ and (3) have no careless respondent flags from prior collection waves.²² Participants were compensated \$3.50 USD for completing each wave of data collection for a total compensation from the three waves of \$10.50 USD.

After eliminating 11 participants who missed two or more attention checks and/or had incomplete data, the final sample consisted of 304 participants (59% male, $M_{age} = 40$ years, range:

TABLE 1. Participants Characteristics

Variable	Percentage	n
Gender		
Male	59%	178
Female	41%	125
Other	<1%	1
Age		
Younger than 25	4%	12
26–35 years old	34%	104
36–45 years old	35%	106
46–55 years old	16%	48
Older than 56	10%	31
Missing	1%	3
Race		
African American or Black	7%	22
Asian or Pacific Islander	10%	30
Anglo/White	76%	231
Hispanic or Latinx	6%	17
Other Minorities	1%	4
Work status		
On-site	50%	151
Work from home	50%	153
Essential worker status		
Nonessential worker	65%	197
Essential worker	30%	92
Does not know/missing	5%	15
Industry		
Administration and support services	7%	20
Educational services	10%	31
Finance	10%	30
Healthcare or social assistance	10%	30
Manufacturing	7%	21
Professional, scientific, or technical services	19%	58
Retail	10%	34
Other	28%	85

22 to 75 years, 76% White, 50% working on-site, 50% working from home, 30% classified as essential workers, 19% employed in professional, scientific or technical services, 10% employed in retail trade). See Table 1 for complete participant descriptive statistics.

We utilized a two-month interval lagged design to minimize issues related to common method bias.²³ Specifically, workplace COVID-19 climate was measured at Time 1; attitudes toward the CDC COVID-19 prevention guidelines were measured at Time 2; work and non-work sickness presenteeism were measured at Time 3. Information regarding gender, age, race, work status (ie, on-site vs working from home), essential worker status, and industry sector was also collected.

MEASURES

Workplace COVID-19 Climate

An 11-item measure of workplace COVID-19 climate was developed to assess employee perceptions of the COVID-19 related policies, practices, and procedures within the respondent’s workplace instituted in response to the pandemic. The items in the measure were directly developed based on guidance published by the CDC for businesses to prevent the spread of COVID-19²⁴ and demonstrated excellent internal consistency ($\alpha = .83$). Sample items include: My workplace... “encourages workers who have been exposed to COVID-19 to stay home,” “. . .provides policies and procedures for employees who have signs and/or symptoms of COVID-19,” “. . .facilitates social distancing (eg, working at least 6 ft apart from others, providing physical barriers),” “. . .offers telework options for workers who do not need to be on-site.”

Participants responded on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The full scale can be found in the Supplemental Digital Content as Appendix A, <http://links.lww.com/JOM/A914>. A mean composite score was calculated such that higher scores reflected a more positive workplace COVID-19 climate. To further test the psychometric properties of this scale, we ran a confirmatory factor analysis. The model fit the data acceptably ($\chi^2[42] = 143.8$, CFI = .90, RMSEA = .08, SRMR = .07). However, items 10 and 11 showed low factor loadings and future research might consider dropping these items.

COVID-19 Prevention Attitudes

An 8-item measure of attitudes toward the CDC COVID-19 prevention guidelines²⁵ was used to assess participant attitudes toward social distancing and hygiene recommendations and was shown to have excellent internal consistency ($\alpha = .91$). A sample item includes “It is important to maintain a distance of at least 6 ft from others when out in public or at work.” Participants responded on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). A mean composite score was calculated such that higher scores reflected more positive attitudes toward the CDC COVID-19 prevention guidelines.

Workplace Sickness Presenteeism

A 3-item measure to assess workplace sickness presenteeism was adapted from a single item sickness presenteeism measure^{26(p. 504)}: “Has it happened over the previous 12 months that you have gone to work despite feeling that you really should have taken sick leave due to your state of health?” The item was modified to read “Since the start of the pandemic, how often have you gone to work despite feeling under the weather (eg, cough, low fever, sore throat, fatigued, etc)?” To ensure adequate construct coverage, we added two additional items: “Since the start of the pandemic, how often have you gone to work despite being possibly exposed to someone with COVID-19,” and “Since the start of the pandemic, how often have you gone to work despite being diagnosed with COVID-19.” Participants responded on a 6-point scale ranging from 1 (*Never*) to 6 (*Five times or more*). A mean composite score was calculated such that higher scores reflected greater enactment of sickness presenteeism behaviors at work and was found to have satisfactory internal consistency ($\alpha = .72$).

Non-Work Sickness Presenteeism

Similarly, participant non-work sickness presenteeism was measured using three items. As above, we adapted the single item measure²⁶ into a 3-item measure, replacing the phrase “gone to work” with “gone to an indoor public place (eg, restaurant, grocery store, bar)” in all three items. Participants responded on the same 6-point scale ranging from 1 (*Never*) to 6 (*Five times or more*). A mean composite score was calculated such that higher scores reflected

greater enactment of sickness behaviors in non-work settings and was found to have adequate internal consistency ($\alpha = .66$).

RESULTS

As can be seen in Table 2, workplace COVID-19 climate was correlated with subsequent work-related sickness presenteeism ($r = -.18$, $P < .05$), but not non-work-related presenteeism ($r = -.01$, ns). Additionally, a more robust COVID-19 climate was associated with subsequently more positive attitudes toward the CDC COVID-19 prevention guidelines ($r = .35$, $P < .001$), and those attitudes were significantly associated with both work and non-work forms of sickness presenteeism ($r = -.24$ and $-.22$, respectively, $P < .01$).

In order to more rigorously evaluate the hypothesized indirect effect of the workplace COVID-19 climate on these two forms of sickness presenteeism, we conducted a lagged path analysis using MPlus 8.5. The models were estimated using the default maximum likelihood estimator. Parameter estimates, standard errors, and 95% confidence intervals for the full sample (when evaluating non-work sickness presenteeism) and the working on-site sub-sample (when evaluating work sickness presenteeism) are separately reported in Table 3.

In support of Hypothesis 1, we found that a positive workplace COVID-19 climate at Time 1 predicted more positive attitudes at Time 2 toward the CDC prevention guidelines both in the full sample model and in the on-site sample ($b = 0.32$, $P < .001$ and $b = 0.38$, $P < .001$, respectively). In support of Hypothesis 2, Time 2 prevention attitudes were negatively associated with subsequent Time 3 levels of non-work and work sickness presenteeism ($b = -0.15$, $P < .001$ and $b = -0.13$, $P = .001$, respectively). In other words, more positive COVID-19 prevention attitudes were associated with less presenteeism in and outside of the workplace two months later. Finally, as predicted by Hypothesis 3, we found that the workplace COVID-19 climate was indirectly related to non-work and work sickness presenteeism via the hypothesized mediating COVID-19 prevention attitudes variable ($b = -0.05$, $P < .001$ and $b = -0.06$, $P = .04$, respectively).

DISCUSSION

While the rapidly spreading novel coronavirus SARS-CoV-2 has been a global threat to public health, surveys and contact tracing indicate that many people continue to frequent public places and go to work while sick with COVID-19 or under isolation/quarantine orders.^{6,7} While there are many individual differences in reasons¹² why people may engage in work and non-work sickness presenteeism (eg, financial exigency, job insecurity, etc.), the purpose of the current study was to examine the role that one’s workplace may play in shaping attitudes toward the CDC COVID-19 prevention guidelines and eventual behavioral enactment of work and non-work sickness presenteeism. Such research is important because it

TABLE 2. Correlations Among Study Variables

	M	SD	1	2	3	4
1. Workplace COVID-19 climate	5.38	1.05		0.39*	-0.05	-0.18 [‡]
2. COVID-19 attitudes	6.14	0.99	.35*		-0.20 [‡]	-0.24 [†]
3. Non-work sickness presenteeism	1.26	0.71	-0.01	-0.22*		0.65*
4. Work presenteeism	1.19	0.58	-	-	-	

Correlations below the diagonal are based on the full sample, whereas correlations above the diagonal represent only on-site workers (N = 150). Means and SDs are based on the full sample except work presenteeism, which is derived from the on-site workers only.

* $P < .001$.

[†] $P < .01$.

[‡] $P < .05$.

TABLE 3. Parameter Estimates for Models Predicting Sickness Presenteeism

Variables	Full Sample (N = 304)				On-site Workers (N = 151)			
	Parameter Estimate	SE	95% CI		Parameter Estimate	SE	95% CI	
			LL	UL			LL	UL
Outcome: COVID-19 attitudes								
Workplace COVID-19 climate	0.32*	0.05	0.22	0.42	0.38*	0.05	0.23	0.52
R ²	0.12				0.16			
Outcome: Non-work presenteeism								
COVID-19 attitudes	-0.15*	0.03	-0.22	-0.08				
Workplace COVID-19 climate	0.04	0.03	-0.02	0.11				
R ²	0.06							
Indirect effect	-0.05*	0.01	-0.07	-0.02				
Outcome: Work presenteeism								
COVID-19 attitudes					-0.13 [‡]	0.06	-0.24	-0.02
Workplace COVID-19 climate					-0.06	0.05	-0.17	0.07
R ²					0.07			
Indirect effect					-0.06 [‡]	0.02	-0.10	-0.004

95% confidence intervals refer to the normal theory confidence intervals.

*P < 0.001.

†P < 0.01.

‡P < 0.05.

connects the workplace environment and the normative COVID-19 prevention expectations within to individual behaviors that have an impact on community spread of the novel coronavirus both in and outside of the workplace.

Grounded in the theory of planned behavior,¹⁶ our study suggests that workplace COVID-19 climate and employee attitudes toward the CDC prevention guidelines act as predictors of work and non-work sickness presenteeism. Attitudes toward the COVID-19 prevention guidelines were significant drivers of subsequent work and non-work sickness presenteeism. This comports with the theory of planned behavior and earlier research on the effects of attitudes toward health behavior and subsequent behavioral actions. Namely, individuals with positive attitudes toward the CDC COVID-19 prevention guidelines are more likely to adhere to them by staying at home while experiencing COVID-19 related symptoms or following a known exposure. Further, comporting with prior research on other aspects of organizational climate (eg, safety climate²⁷), workplace COVID-19 climate appears to shape subsequent employee attitudes toward COVID-19 prevention behaviors. Additionally, using a lagged design, we demonstrated that not only was a robust workplace COVID-19 climate directly predictive of more positive attitudes toward COVID-19 prevention behaviors, but also had indirect beneficial effects on both work and non-work sickness presenteeism via those improved employee attitudes. These results indicate that workplaces can help shape the course of the pandemic, not only by stemming transmission at work, but also by improving employee attitudes toward the COVID-19 prevention guidelines and decreasing sickness presenteeism behaviors outside of the work setting within the community.

Theoretical, Practical, and Clinical Implications

Theoretically, our results align with extant research linking organizational climate with on-the-job behaviors.^{28–30} However, by additionally demonstrating the impact of workplace COVID-19 climate on non-work sickness presenteeism, our study suggests an important linkage between workplace practices and public health. Although previous studies have shown the impact of various aspects of the work environments (eg, workplace aggression, incivility) on non-work consequences such as work-family conflict,

insomnia, and life satisfaction,^{31,32} the impact of workplace climate on sickness presenteeism behavior outside of the work setting has not been studied to our knowledge. Thus, this study contributes to the area by linking the workplace COVID-19 prevention environment to non-work behavioral outcomes relevant to reducing community spread of the virus.

From a practical perspective, work and non-work forms of sickness presenteeism pose serious health problems within the U.S. Nearly half of U.S. workers have jobs that require them to work in-person and in close proximity to others.³³ Even prior to the pandemic, up to 92% of health care providers reported sickness presenteeism during the influenza season.³⁴ Researchers and public health officials have warned that the consequences of sickness presenteeism can be even more dire in light of the increased lethality of COVID-19.¹³ Workplace presenteeism negatively affects the employee, their coworkers, and the community: it can exacerbate health problems and increase long-term sickness absence for the worker, increase accident and injuries for the worker and coworkers, and transmit contagious illness to the community in which the workplace is embedded.¹⁰

Fortunately, our results suggest that sickness presenteeism can be reduced by creating a positive workplace COVID-19 prevention climate. Indeed, the U.S. Centers for Disease Control has provided extensive guidelines for businesses and employers (eg, “actively encourage sick employees to stay home” and “conduct daily in-person or virtual health checks”) to prevent and reduce transmission among employees. By proactively adopting these CDC guidelines and reinforcing their implementation among employees within the workplace, our data indicate that this has positive downstream effects on employee attitudes toward COVID-19 prevention and subsequent sickness presenteeism in work and non-work settings.

Conversely, organizational cultures that stigmatize sick leave and place high workload pressures on employees have been related to an increased risk of presenteeism.³⁵ Evidence of this has similarly been reported during the pandemic. For instance, at a meatpacking plant employing 3000 workers, employees with no unexcused absences were given pay bonuses; about 240 COVID-19 cases were subsequently linked to the plant making its rural county location in Texas a state hot spot.³⁶ Our results lend empirical support to the

need for organizations to take preemptive action for their workers' health and reduce the transmission of SARS-CoV-2 within workplaces and into their communities beyond.

Strengths, Limitations, and Future Research Directions

Our study used a lagged 3-wave design to test the proposed mediation model using longitudinal data collected over five months during the holiday surge and at a time when many workplaces were reopening. However, findings should be interpreted with the following limitations in mind. First, although our sample included participants from 44 states and Washington D.C., our study did not use a nationally representative sample. Comparisons indicate our sample was more educated (67% reporting college degree or higher) compared to the U.S. labor force (40% with bachelor's degree or higher).^{37,38} On the other hand, only slight differences were observed between our sample and the U.S. labor force with respect to age, gender, and race (sample: $M_{age} = 40$, 59% male, 76% White vs labor force population: Median_{age} = 40 to 44, 53% male, 78% White). Therefore, our findings should ideally be confirmed using a larger nationally representative survey.

Although transmission of the virus among workers at meat-packing facilities and some other factories has been widely reported via media, and our data clearly link the workplace COVID-19 climate and employee attitudes with presenteeism behaviors, future research by epidemiologists should also investigate actual transmission of the novel coronavirus as a function of these work and non-work sickness presenteeism behaviors. Additionally, given that state-level COVID-19 regulations and guidelines for workplaces vary widely, it would be important to take a multilevel approach to determine whether these state-level regulations impact the robustness of the workplace COVID-19 climate and subsequent employee attitudes and presenteeism behaviors. Finally, in order to investigate possible bidirectional effects or reverse causality (eg, sickness presenteeism influencing subsequent perceptions of the COVID-19 climate), future research should implement a fully cross-lagged panel design.

CONCLUSION

As more employees return to onsite work (and, even as many continue to work remotely), our study shows that companies can play a significant role in shaping attitudes toward COVID-19 prevention guidelines and reducing work and non-work sickness presenteeism for onsite and remote workers. By developing policies supportive of the CDC prevention guidelines and conveying normative expectations regarding COVID-19 prevention behaviors, this has downstream effects on work and non-work-related presenteeism by improving employee attitudes toward the CDC prevention guidelines.

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