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Examining the relationship between fear of COVID-19, intolerance for uncertainty, and cyberloafing: A mediational model

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ABSTRACT
After the COVID-19 pandemic began, organizations had to pivot and move to online remote work. As companies moved to digital platforms and technologies for remote working, a key concern was the increase in workplace withdrawal behaviors during the pandemic, including cyberloafing, a form of workplace deviance. Cyberloafing can be described as the action of using the internet for non-work-related activities or personal use during working hours. Given its effect on organizational effectiveness and efficiency, organizations must take measures to minimize cyberloafing. We examined how two factors—fear of COVID-19 and intolerance for uncertainty—were related to cyberloafing during the third lockdown in Israel. A sample of 322 adults who were enrolled in professional courses at a university in Israel were surveyed. Based on Conservation of Resources Theory, our findings suggest that distress significantly mediated the relationship between fear of COVID-19, intolerance for uncertainty, and cyberloafing. In an attempt to deal with the stress and depletion of personal resources during the COVID-19 lockdown, individuals engaged in cyberloafing as a way to handle the stress. Our results suggest that organizations should take measures to reduce fear and uncertainty in order to decrease distress, which, in turn, will reduce cyberloafing.

1. Introduction
Advances in information technology and the availability of high-speed internet have led to considerable growth in remote work over the last decade. Reliance on remote work has further increased during the COVID-19 pandemic because organizations have been forced to practice physical distancing and avoid face-to-face meetings, which has led to remote work becoming the norm (Wang et al., 2021). Remote working is defined as a flexible work arrangement whereby employees work in locations which are remote from their central offices or production facilities and the worker has no personal contact with co-workers but is still able to communicate with them using technology (Soga et al., 2022; Di Martino & Wirth, 1990). Theorists suggest that the pandemic has created significant changes in work that will continue in the future, including the increased use of technology-related interfaces and online training (Vaziri et al., 2020). While remote work provides flexibility in work schedules (Allen et al., 2015), some scholars (e.g. Di Martino & Wirth, 1990; Eurofound and the International Labour Office, 2017; Grant et al., 2013; Konradt et al., 2003; Kossek & Lautsch, 2018) have highlighted the challenges associated with remote work, including work–home interference and cyberloafing.

Employees who work outside conventional offices may be more vulnerable to working longer hours, work–home interference and, in some cases, greater stress (Kim et al., 2016; Eurofound and the International Labour Office, 2017). In addition, employees who work from home may be more likely to engage in cyberloafing because it is easier to avoid being caught by supervisors and coworkers (O’Neil et al., 2014). In particular, given the increased reliance on technology and remote work during the pandemic and likely post-pandemic, cyberloafing has become an important topic for organizations (Oosthuizen et al., 2018).

Although many industries have been affected by the pandemic, service provider industries (e.g. hospitality and educational services), in particular, have had to adapt information technology and a remote working model given their reliance on face-to-face interactions; hence,
these industries may have seen a greater rise in cyberloafing. To better understand cyberloafing in the hospitality industry during the COVID-19 pandemic, Khawaja et al. (2021) found that cyberloafing moderated the relationship between aggression and employee withdrawal behavior in the hospitality industry in Pakistan. Our study explores the antecedents of cyberloafing during remote work in an educational environment in Israel during the pandemic. To do so, we surveyed a sample of working adults who were studying at a university and using digital platforms and technologies while simultaneously working remotely.

The concept of cyberloafing was first operationalized by Lim (2002) who referred to cyberloafing as personal e-mailing and browsing activities that an employee voluntarily undertakes during work hours. Later, Henle and Blanchard (2008) extended this conceptualization by proposing that cyberloafing encompassed minor activities such as, browsing, e-mailing or shopping and major activities including, blogging, gambling and surfing adult websites activities. Cyberloafing is characterized as the personal use of technology to idle and for non-work purposes instead of work (Lim, 2002). It is considered a counterproductive and deviant behavior to use technology for personal purposes during working hours (Askew et al., 2014). Cyberloafing is a withdrawal behavior that can exist in various work contexts and includes behaviors such as online shopping in the office during work hours or downloading music during the workday at home. However, cyberloafing at home during the pandemic differs from our existing knowledge on cyberloafing in a work (office) context, largely because of the changing nature of remote work during the pandemic.

Cyberloafing is a major concern for organizations because it increases financial and efficiency losses (Mashal, 2020; Zhou et al., 2021), exposes organizations to liability and data security risks (Mariani et al., 2021; Kim et al., 2015), and is related to increased employee fatigue (Wu et al., 2020). Despite its importance, cyberloafing is a relatively unexplored construct, and little is known about the external stressors and underlying mechanisms that affect cyberloafing (for a meta-analysis, see Mercado et al., 2017;). Given the heightened levels of stress during the pandemic, there is a need to understand how the pandemic context affects individuals’ wellbeing and their ability to work effectively when working remotely (Wang et al., 2021).

The purpose of this study is to examine how two factors—fear of COVID-19 and intolerance for uncertainty—are related to distress, as well as their engagement in cyberloafing in a higher education setting. In this study, we ask the following research questions: Is there a relationship between fear of COVID-19 and intolerance for uncertainty and cyberloafing? Does distress mediate the relationship between fear of COVID-19, intolerance for uncertainty, and cyberloafing?

We suggest that psychological distress is a mechanism through which fears and uncertainties during COVID-19 relate to cyberloafing. In the clinical domain, both fears of COVID-19 infection and IU have been identified as well-known risk factors for mental health indicators such as depression, generalized anxiety, hopelessness, and psychological distress (Ahorsu et al., 2020; Rettie & Daniels, 2021; Satci et al., 2020). In line with this perspective, we argue that individuals may risk a downward spiral; individuals’ psychological distress from fear of COVID-19 and IU during the pandemic can drain their resource bases. As a result, employees will engage in cyberloafing as a coping mechanism. Specifically, fears and uncertainties will increase psychological distress, which may trigger an avoidance (“flight”) response (Cannon, 1927).

According to stress models, this avoidance action is triggered when one believes that the situation is too threatening (Folkman & Lazarus, 1980). The pandemic is considered a major traumatic and stressful life event (Reizer et al., 2021); therefore, it is likely to activate an avoidance (“flight”) response. Thus, we assume that the flight response will be activated in terms of cyberloafing behavior. The present study contributes to the literature because it clarifies how environmental pandemic stressors can change individuals’ cyberloafing patterns. Our examination of fear of COVID-19 and IU as core determinants of cyberloafing is a significant shift from past work that has primarily focused on job-related stressors as predictors of cyberloafing (Mercado et al., 2017) rather than broader stressors on a global level. Consequently, the present study responds to the call by organizational researchers to provide more contingency-based approaches to the negative outcome of life-threatening stressors (De Clercq et al., 2017; Raja et al., 2020; Toker et al., 2015).

In addition, our study examines a relatively underexplored topic in the organizational domain—namely, the perception of IU (Reizer et al., 2021). Given the unclear nature of the pandemic as it relates to various questions (e.g. severity of infection; economic, social, and organizational aspects), one would expect that individuals with higher levels of IU would suffer more from various aspects of COVID-19 uncertainties (Rettie & Daniels, 2021) compared with those with lower levels of IU. By focusing on the role of IU, the present study can shed light on the outcomes of resource loss uncertainty in different contexts (Halbesleben et al., 2014).

A pre-COVID-19 meta-analytic study found that intolerance of uncertainty was positively associated with digital technology penetration (Carleton et al., 2019). More recently, COVID-19 worries were correlated with cyberloafing (Khawaja et al., 2021). Hence, it is important to understand these associations during a COVID-19 lockdown and to clarify the mechanism in the relationship. Our study provides valuable insights into this line of research by examining the relationship between fear of COVID-19, intolerance for uncertainty, and cyberloafing, and also contributes to the limited number of studies on cyberloafing during the pandemic (e.g. Bendau et al., 2021; Khawaja et al., 2021; Turel & Ferguson, 2020; Zhong et al., 2022). We also address the recent call of Marsh et al. (2022), who conducted an integrative review of the negative effect of technology on employees, to expand scholars’ understanding of the antecedents and mediators of the dark side of technology use at work (Kaur et al., 2020, 2021).

First, we argue that fear of COVID-19 and perceived intolerance of uncertainty (IU) are two proximal factors during the pandemic (Wu et al., 2021) that represent life and health threats to one’s personal resources, as well as potential threats while dealing with the unknown. That is, the higher the level of environmental fears, the more likely it is that employees will experience an increased threat to their valuable resources (Toker et al., 2015). Moreover, continuous threats outside the workplace deplete individuals’ personal resources (both cognitive and emotional). This vicious loss cycle may lead to undermining employees’ ability to assign significant energy to other cognitive-consuming tasks and work assignments (Hobfoll et al., 2000; Behl et al., 2021). This, in turn, may increase counterproductive behaviors such as cyberloafing.

Second, we suggest that psychological distress is a mechanism through which fears and uncertainties during COVID-19 relate to cyberloafing. In the clinical domain, both fears of COVID-19 infection and IU have been identified as well-known risk factors for mental health indicators such as depression, generalized anxiety, hopelessness, and psychological distress (Ahorsu et al., 2020; Rettie & Daniels, 2021; Satci et al., 2020). In line with this perspective, we argue that individuals may risk a downward spiral; individuals’ psychological distress from fear of COVID-19 and IU during the pandemic can drain their resource bases. As a result, employees will engage in cyberloafing as a coping mechanism. Specifically, fears and uncertainties will increase psychological distress, which may trigger an avoidance (“flight”) response (Cannon, 1927).

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examined the mediating path between workplace stressors and emotional exhaustion (Rector et al., 2011) and workplace ostracism (Ahorsu et al., 2020). The COR theory emphasizes that resource loss in one domain (e.g., situational or external stress) may lead to resource constraints in other domains (work or educational outcomes) due to a downward spiral (Hobfoll, 1989). For example, research has shown that employees who undergo gradual resource depletion because of the fear of a terror attack may develop job burnout (Toker et al., 2015) or have a loss of energy in productive job behaviors (Haq et al., 2019). One of the ways to cope with individual feelings of fear is through social media, the internet (Király et al., 2020) and the phone. These behaviors offer reassurance and safety relief (Carleton et al., 2019). Specifically, one way to cope with and alleviate work stress in the workplace is to participate in cyberloafing activities (Henle & Blanchard, 2008; Pindek et al., 2018). Cyberloafing may act as a coping strategy that distracts employees from the demands of stressful events during the pandemic (Khawaja et al., 2021). The literature suggests that the fear of being infected with COVID-19 may amplify problematic gaming, social media, and smartphone use as coping strategies for self-regulation among students (Chavan et al., 2021; Lin et al., 2020). Further, fear of COVID-19 was found to be positively related to withdrawal behaviors such as turnover intention among nurses during the pandemic (De los Santos & Labrague, 2021). In addition, a recent study found that COVID-19 worry was correlated with withdrawal behaviors and cyberloafing among hotel industry employees in Pakistan (Khawaja et al., 2021). To extend this research line, the present study examines the relationship between the role of fear of COVID-19 and cyberloafing.

Individuals who are concerned and fearful may use maladaptive “safety behaviors” (Rector et al., 2011) such as seeking reassurance in the social network, searching for information, and checking emails. That is, cyberloafing behaviors and technology use provide unrestricted access to safety cues intended to reduce distress (Carleton et al., 2019). It follows that individuals who must devote resources to deal with their fears of COVID-19 may be more likely to engage in cyberloafing because they seek to preserve their remaining resources and thus are unwilling to concentrate on other consuming behaviors such as working. Based on this theoretical reasoning, we hypothesize the following:

H1: Fear of COVID-19 will be positively related to cyberloafing.

2.2. Relationship between fear of COVID-19 and cyberloafing

A common theme in recent literature on the COVID-19 pandemic is the dominance of fear (Ahorsu et al., 2020; Garfin et al., 2020). People worldwide are experiencing fear of being infected, fear of social contact with an infected individual, or fear regarding the death of a family member (Ahorsu et al., 2020). According to the COR theory, “individuals strive to retain, maintain and protect those things (resources) they most value, both material and psychosocial” (Hobfoll, 1989, p. 516). The “threat to life” associated with the pandemic may threaten self-preservation needs (i.e., fear of death) and the lives of close family, thus eliciting significant stress (Hobfoll et al., 2006). Similarly, terror management theory suggests that the self-preservation threat is a key motive that brings to the forefront the salience of mortality, which elicits intense fear (Pyszczynski et al., 1997). As such, when fear of COVID-19 is activated, it may affect all domains of life, leading to several maladaptive emotional and behavioral reactions because “with high levels of fear, individuals may not think clearly and rationally” (Ahorsu et al., 2020, p. 2). For example, fear of COVID-19 may lead to future career anxiety (Mahmud et al., 2021), additional media consumption (Bendau et al., 2021), and cyberchondria (fear and anxiety activated due to a health-related search online) (Vu et al., 2021).

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comprises two factors: prospective IU (i.e. cognitive appraisals about uncertainty) and inhibitory IU (i.e. behavioral inhibition in the face of uncertainty; McEvoy et al., 2019). Both represent different and maladaptive responses that are aimed at either resolving or avoiding the aversive uncertainty circumstances (Carleton, 2016). However, empirical evidence indicates that it is appropriate to use a composite score of IU (McEvoy et al., 2019; Shihata et al., 2018).

The construct of IU first appeared in the clinical psychology literature and has been the focus of research in this area (e.g. Hillen et al., 2017; McEvoy et al., 2019). A rich body of work from clinical, medical, and healthcare domains has examined the effect of IU on psychopathological phenomena (e.g. Hillen et al., 2017; McEvoy et al., 2019). Substantial evidence indicates that IU is a potent stressor and predicts psychopathologies such as anxiety, depression, emotional disorders, and impact behavior (for meta-analyses, see Gentles & Ruscio, 2011; McEvoy et al., 2019). In addition, IU is a core predictor of maladaptive coping, such as worry, as well as avoidance of decision-making such as minimizing or ignoring uncertainty while focusing one’s attention elsewhere (for additional reviews, see Hillen et al., 2017; McEvoy et al., 2019). IU has been correlated with problematic behaviors such as eating disorders and alcohol consumption (Kraemer et al., 2015), and phone and internet use (Carleton et al., 2019). For example, a meta-analytic study indicated that a statistically significant increase in IU levels in the past decade was associated with increased mobile phone penetration and internet usage (Carleton et al., 2019). During the COVID-19 pandemic, IU has become an even greater risk factor (Mariani et al., 2021; Reizer et al., 2021).

Research focusing on the role of IU in the organizational domain is less mature and relatively sporadic (Furnham & Marks, 2013). However, there are some indicators that IU may serve as a risk factor in the organizational domain. Organizational researchers have examined similar constructs relating to uncertainty. For example, Otto et al. (2010) found that uncertainty tolerance has been found to be positively related to occupational change considerations. Similarly, IU has been associated with more costly clinical decisions and poorer medical treatment among physicians in healthcare organizations (Wayne et al., 2011).

According to the COR theory, people feel threatened when they actually face loss or perceive the unknown potential for loss (Hobfoll et al., 2018). Valuable research on the role of uncertainty, using the lens of the COR theory, suggests that uncertainty causes a resource loss that may carry more significant importance than actual loss (Halbesleben et al., 2014). We assume that resource loss resulting from uncertainty would increase cyberloafing. Our argument relies on another COR principle (Hobfoll et al., 2018), which states that reduced resources (i.e. ego depletion) will trigger a defensive preserving behavior aimed at protecting the remaining resources. This built-in evolutionary strategy can be defensive (i.e. to conserve resources) or exploratory (i.e. to search for alternative survival or adaptation solutions).

While this is the least researched principle of the COR theory (Hobfoll et al., 2018), it has high explanatory power for our study. Individuals who experience an increased IU are motivated to reduce these threatening feelings (Carleton et al., 2019). In the present study, we examine cyberloafing as a withdrawal behavior because it offers an individual a temporary distraction and respite from stressors and prevents further loss of resources (Chong et al., 2020; Kiazad et al., 2014). However, a technological tool may serve as an alternative safety cue because it provides perceived certainty and security through seeking contact, support, and comfort with others, searching for additional information on the internet, and watching the news (Carleton et al., 2019; Rozgonjuk et al., 2019). Although the direct association between IU and cyberloafing has not yet been examined using COR principles, previous studies have examined the associations between IU and problematic smartphone use among college students (Rozgonjuk et al., 2019). Based on the COR theory (Hobfoll et al., 2018), we hypothesize the following:

H2: IU will be positively related to cyberloafing.

2.4. Mediating role of psychological distress

The COR theory supports the mediating role of psychological distress in the associations between fear, IU, and cyberloafing. According to the fundamental principle of COR, when resources are threatened, the individual experiences a lack of adaptation to the environment, which leads to distress, anxiety, and depression (Halbesleben et al., 2014; Hobfoll et al., 2018). An extensive body of research supports this assumption, indicating that resource loss is the main predictor of psychological distress following exposure to external traumatic events such as hurricanes (Zwiebach et al., 2010), shooting events (Littleton et al., 2011), and terror attacks (Toker et al., 2015). In the same manner, depletion of personal resources due to COVID-19 may lead to mental exhaustion (Chong et al., 2020) distress or discomfort under the threat of a lockdown (Merino et al., 2021). This distress may lead to defensive and preservation approaches such as workplace withdrawal (Chong et al., 2020). Indeed, Chong et al. (2020) suggested that employee emotional exhaustion has mediated the associations between task setback stressors and withdrawal behaviors during COVID-19. In the same vein, cyberloafing meets the definition of withdrawal behavior because the employee avoids working and spends less time working than they are expected to (Askew et al., 2014). In addition, cyberloafing, which is a form of withdrawal behavior from work, can buy employees time for their resource pool to replenish (Troougakos & Hiedeg, 2009).

Another theoretical framework that might explain the mediating role of distress in the associations between fear, IU, and cyberloafing is the Compensatory Internet Use Theory (CIUT; Kardefelt-Winther, 2014). According to this theory, people engage in excessive technology use as a compensatory and maladaptive behavior aimed at coping with and regulating distress and its negative effects (Kardefelt-Winther, 2014). CIUT posits that this compensatory and regulatory mechanism is not pathological in itself, but it may result in excessive internet usage (Elhai et al., 2018) and even problematic engagement in digital technology use in some individuals (Elhai et al., 2018; Wang et al., 2015; Zhitomirsky-Geffet & Blau, 2016). An expansion of the theory, the I-PACE (Interaction of Person-Affect-Cognition-Execution) (Brand et al., 2016,2019), suggests that predisposing individual factors (e.g. cognitions, personality traits, and biopsychological factors) affect individuals’ emotional response (e.g. psychological distress). Such emotional responses may facilitate prolonged time spent on internet-related activities (Young & Brand, 2017) and even problematic internet use (Squires et al., 2021). Studies based on both theories suggest that psychological distress is associated with increased time spent on internet-related activities in general (e.g. Elhai et al., 2018; Rozgonjuk & Elhai, 2021) and during the COVID-19 outbreak period in particular (Wang et al., 2021). Specifically, Rozgonjuk et al. (2019) suggested that psychological distress mediated the associations between IU and problematic smartphone use among students, suggesting that excessive cellular use can be conceptualized as a compensating strategy for regulating evoked distress and worry among individuals who are higher in IU.

From a COR perspective, we argue that fear of COVID-19 appears to correspond to primary resources (e.g. fears of death and dying) defined by COR. However, IU includes both the survival fear of the unknown and the loss of financial or social capital (e.g. losing one’s job, handling family and work during lockdown), which reflects threats to secondary resources according to COR (Hobfoll et al., 2001). Both threats would evoke psychological distress, and several studies have supported this argument by suggesting that stress of COVID-19 (Reizer et al., 2020) and IU (Rettie & Daniels, 2021; Reizer et al., 2021; Satici et al., 2020) predict anxiety, depression, and feelings of psychological distress. Distress can lead to distraction and impair one’s efforts to focus on tasks or new challenges in the workplace (Haj et al., 2019; Toker et al., 2015), thereby increasing their desire to defend their remaining resource by participating in the “recovery” (Andel et al., 2019). By integrating both I-PACE and CIUT, we refer to cyberloafing as the technological compensation mechanism for ineffective managing of
this distress. Thus, we suggest that psychological distress may serve as a pathway through which COVID-19 concerns are related to cyberloafing. Based on the literature, we hypothesize the following:

- H3a: Fear of COVID-19 will be positively related to psychological distress; in turn, increased levels of psychological distress will be related to greater levels of cyberloafing.
- H3b: IU will be positively related to psychological distress; in turn, increased levels of psychological distress will be related to greater levels of cyberloafing.

3. Method

3.1. Participants and procedure

As a result of the COVID-19 lockdowns, education has been radically transformed. There has been an increase in e-learning, with teaching and learning being undertaken remotely and on digital platforms. Given the unexpected shift away from the classroom worldwide, as well as the persistence of the pandemic, it is anticipated that the adoption of online learning, which has disrupted the education system, will continue post-pandemic. This rapid shift to online learning has resulted in several challenges for instructor and learners, including poor user experience and increased stress (Li & Lalani, 2020). Hence, our sample consisted of employees taking classes at a university. A total of 332 Israeli participants were recruited to take part in the study. Ten participants missed more than 30% of the responses to the questionnaire items. Given that these missing data might bias the results (Schafer & Graham, 2002), these missing data might bias the results. A sample item was found between the excluded and the final groups in age (t(329) = -4.07, p < .001, r = 0.30) for all statistical tests.

The final sample consisted of 322 individuals currently taking classes at a university in Israel. The participants’ ages ranged from 18 to 51 years (mean age = 24, SD = 2.89), and 59% of the sample were female (41%) were male. All measures were translated from English to Hebrew and then back-translated. Approximately 42% of the participants were working when the survey was completed during the third COVID-19 lockdown in Israel. On December 24, 2020, the Israeli government declared a third nationwide lockdown, which was then extended until the end of January. The survey link was available from December 28, 2020 to January 10, 2021, during the lockdown period.

3.2. Measurements

Cyberloafing was assessed using a six-item scale (Blanchard & Henle, 2008; Lim, 2002). Participants were asked to assess how frequently they agreed with propositions relating to IU during the pandemic using a five-item Likert scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”). Cronbach’s alpha coefficient was 0.85.

The Kessler Psychological Distress Scale (Kessler et al., 2002) measured the psychological distress construct (e.g. “About how often do you feel nervous?”). The response scale ranged from 1 (“none of the time”) to 5 (“all of the time”). In the clinical literature, the K10 is presented as a valid diagnostic tool for psychological distress. It is a useful diagnostic screening instrument in general population samples (Donker et al., 2010). As a diagnostic tool, the K10 has a cut-off score for screening scale for psychological distress (Vasiliadis et al., 2015). The strict criterion reported by Donker et al. (2010) indicates that the optimal cut-off score based on any depressive or anxiety disorder for the K10 is 20. Overall, 42.90% expressed an indication of possible risk for mental distress (Cronbach’s alpha coefficient was 0.92).

We added several control variables, including demographic variables, age, and gender, and one item that measured digital platform preference. Specifically, the participants were asked to rate their preference for digital remote training once the pandemic ends on a scale of 1 (“not at all”) to 5 (“always”).

4. Results

4.1. Preliminary analysis and descriptive statistics

Past researchers have discussed the importance of key informants in understanding organizational issues (Behr, 2020; Fosso-Wamba et al., 2019). The use of responses from respondents in organizations, collected empirically, often suffer from common method bias issues as suggested by Podsakoff et al. (2003) and Ketokivi and Schroeder (2004). To avoid the potential effect of bias on the results, we employed a series of analyses recommended by Jordan and Troth (2020). First, we used Harman’s one-factor test by loading all of the measurement items in our study using exploratory factor analysis. The results confirmed that the variance explained by a single factor is 37.23%, thereby suggesting that our study does not suffer from common method bias. Next, we followed Lindell and Whitney (2001) and applied a marker variable test. We introduced an additional construct in the model that was potentially unrelated to the main constructs and did not find any potential effect that would deter the values of common method variance in the model. The Confirmatory Factor Analysis (CFA) marker technique uses a marker variable(s) in a CFA model to detect common method bias (Fuller et al., 2016). The results of the tests confirmed that the study was free from the issues of common method bias.

CFAs were conducted before testing the research model. It included the cyberloafing, fear of COVID-19, IU, and psychological distress variables. All items were loaded more than 0.40 on their latent factor, and the final measurement model showed an adequate fit ($\chi^2(541) = 935.023, p = 0.00, \chi^2/df = 1.728$, Comparative Fit Index (CFI) = 0.919, Tucker–Lewis index (TLI) = 0.911 and Root Mean Square Error of Approximation (RMSEA) = 0.048). The single-factor measurement demonstrated poor fit with the data ($\chi^2(559) = 2817.989, p = 0.00, \chi^2/df = 5.041$, CFI = 0.538, TLI = 0.509, RMSEA = 0.112) (Kline, 2011). When compared the four-factor model with the one-factor model, we also demonstrated a significant chi-square difference ($\Delta \chi^2(18) = 1992.966, p < .001$).

Table 1

| Mean | SD | 1 | 2 | 3 | 4 |
|------|----|---|---|---|---|
| 3.15 | 0.89 | (.80) | | | |
| 2.64 | 0.71 | .24*** (.85) | | | |
| 1.87 | 0.67 | .11*** (.85) | .36*** (.85) | | |
| 21.08 | 7.86 | .25*** (.92) | .53*** (.92) | .16** (.92) | |
| 2.81 | 1.17 | .11** (.96) | .05 | .18** (.96) | |

Notes: *p < .05 **p < .01 ***p < .001. Reliability coefficients are displayed in the parentheses.
Table 1 presents the means, SD, and correlations between our research variables. As indicated, IU and fear of COVID-19 were positively related to cyberloafing, thus supporting H1 and H2. In addition, psychological distress was positively related to cyberloafing. Finally, IU and fear of COVID-19 were positively associated with psychological distress. We followed the guidelines of Fornell and Larcker (1981) to test the discriminant validity. Additionally, referring to Fawcett et al. (2014), we note that the discriminant validity of all items should have higher loadings on their assigned construct when compared to other constructs. It is also noted that the mean shared variance should be below 0.5 and the square root of Average Variance Extracted (AVE) for each construct should be greater than any correlation estimates of the remaining pairs. Based on the listed criterion, we confirm discriminant validity.

4.2. Hypothesis analysis

We performed structural equation modeling (SEM) to test the hypotheses of the proposed model. A major advantage of covariance-based SEM (CB-SEM) is the ready accessibility to indirect and total effects, as well as the direct causal effects between the exogenous and endogenous constructs. In the case of CB-SEM, which is a confirmatory approach, the method requires the specification of the full theoretical model prior to data analysis. The model fit constraints of CB-SEM are more appropriate for established theory testing and confirmation (Astrachan et al., 2014; Rigdon et al., 2017). The present study abides by the requirements of CB-SEM when compared with other forms of SEM and regression.

First, we analyzed the direct associations between IU, fear of COVID-19 and cyberloafing. The results of the direct path provided a good model fit \( \chi^2 = 571 = 474.051; \chi^2/df = 1.65, p < .001; TLI = 0.922; CFI = 0.932; RMSEA = 0.045 \). However, while IU significantly predicted cyberloafing \((\beta = 0.27, SE = 0.19, p = .0001)\), fear of COVID-19 was not significantly associated with cyberloafing in the direct model \((\beta = 0.07, SE = .12p = .31)\). Therefore, the first model analysis supported H2 but did not support H1. While the association between IU and cyberloafing was mostly supported, the direct association between fear of COVID-19 and cyberloafing did not provide a conclusive support to the unique relationships. It has been strongly suggested that researchers may still proceed with mediation analysis, even when the direct relationships are non-significant as the indirect effects may be significant regardless of the lack of direct associations between the independent and dependent variables (Little et al., 2011; Reizer, 2019; Shrodt & Bolger, 2002). Specifically, Shrodt and Bolger (2002) supported testing the magnitude and significance of indirect effects, particularly if (1) there is a non-significant relationship between the independent and the dependent variable or if (2) the relationship is supported by theory.

Second, we tested the mediation model. The model included direct and indirect paths between IU, fear of COVID-19, and cyberloafing through the mediating path of psychological distress, in addition to a direct path between IU, fear of COVID-19, and cyberloafing. We also controlled for digital platform preference. The results of the mediation model that included both direct and indirect path provided a good model fit \( \chi^2 = 1.651, p < .001; TLI = 0.917; CFI = 0.924; RMSEA = 0.045 \). While performing the mediation model and including both direct and indirect path, the direct associations between fear of COVID-19 and cyberloafing \((\beta = 0.11, SE = 0.12, p = .15)\), as well as between IU and cyberloafing \((\beta = 0.14, SE = 0.22, p = .13)\) were non-significant. According to Hayes (2017), the non-significant associations between the independent and the dependent variable in the mediation model implies full mediation path. Therefore, the associations between IU, fear of COVID-19, and cyberloafing were found to be fully mediated by psychological distress. This final model is presented in Fig. 1.

Table 1 presents the means, SD, and correlations between our research variables. As indicated, IU and fear of COVID-19 were positively related to cyberloafing, thus supporting H1 and H2. In addition, psychological distress was positively related to cyberloafing. Finally, IU and fear of COVID-19 were positively associated with psychological distress. We followed the guidelines of Fornell and Larcker (1981) to test the discriminant validity. Additionally, referring to Fawcett et al. (2014), we note that the discriminant validity of all items should have higher loadings on their assigned construct when compared to other constructs. It is also noted that the mean shared variance should be below 0.5 and the square root of Average Variance Extracted (AVE) for each construct should be greater than any correlation estimates of the remaining pairs. Based on the listed criterion, we confirm discriminant validity.

To examine the mediation hypotheses, we used bootstrapping analysis based on the confidence interval method (Ryu & Cheong, 2017). The indirect effects of individual differences in IU and fear of COVID-19 on cyberloafing through the mediating role of psychological distress were significant. The findings of the hypothesized model supported the mediating role of psychological distress. Psychological distress mediated the effect of fear of COVID-19 on cyberloafing \(( indirect effect = 0.045, p = .009, 95\% CI = [0.017, 0.151] \)), thus supporting H3a. Psychological distress also mediated the effect of IU on cyberloafing \(( indirect effect = 0.148, p = .001, 95\% CI = [0.169, 0.691] \)), thus supporting H3b.

5. Discussion

The current study presents the challenges and consequences of working with digital platforms and technologies for remote working, specifically during the COVID-19 pandemic. Our study expands on the growing interest in the antecedents of cyberloafing behavior and contributes to the recent development in this topic of research (Mashal, 2020; Mercado et al., 2017). Specifically, our research presents an in-depth understanding of cyberloafing during the pandemic and highlights the detrimental effects of fear and uncertainty during the pandemic. Prior research confirms that fear of COVID-19 (e.g. Ahorsu et al., 2020) and IU (e.g. Rettie & Daniells, 2021) have had detrimental effects on people’s mental health during the pandemic. However, prior research has largely overlooked the behavioral consequences of the evoked reactions. Based on the COR, I-PACE, and CIUT theories, we discovered that resource-depleting fear of COVID-19 and intolerance of
uncertainty are positively related with cyberloafing through psychological distress concerns. Our hypotheses were empirically confirmed. The positive link between IU, fear of COVID-19, and cyberloafing, through psychological distress, illustrates how fears and uncertainties about a global virus can generate detrimental outcomes that affect behavioral outcomes. The mediating role of psychological distress indicated that individuals who found it difficult to avoid any COVID-19 concerns suffered from anxiety and distress, which eventually impaired their ability to focus on their assignments and escalated into diminished productive efforts, such as cyberloafing.

This study integrates different models to explain cyberloafing. Our findings relate to the COR theory, which suggests that the resource-draining experience of COVID-19 results in a state of ego depletion (Zhou et al., 2021). As a result, employees attempt to preserve their remaining regulatory resources. This resource protection mode manifests when employees experience a goal-inhibiting incident and subsequently work in a state of distractibility that inhibits them from work engagement (Leroy et al., 2020). In turn, states of psychological distress deplete regulatory resources and put employees into resource protection mode. Our results support Hobfoll et al.’s (2018) argument that threat and loss can both lead to strain and have motivating inhibition potential; however, the consequences of this effect are less well known.

Our findings also represent a valuable research avenue in the stress literature. While previous research has shown that both fear and uncertainty negatively affect one’s personal distress (Reizer et al., 2021) and withdrawal behavior, the COR theory does not explicitly explain how this distress translates into cyberloafing. Based on the CIUT (Kar-defelt-Winther et al., 2017) and I-PACE (Brand et al., 2016), we suggest that the psychological distress caused by these threats fuels a downward spiral or negative passageway to compensatory behavior—such as a cyberloafing behavior (or higher engagement in digital technology use during work)—to distract from and cope with this unpleasant state. This argument is also in line with COR spiraling nature assumptions that people with fewer resources are more vulnerable to further loss of resources (Hobfoll et al., 2018). Following this argument, these depleting activities might be expected to increase employees’ vulnerability to cope with upcoming demands (Van Woerkom et al., 2016) and may decrease their work performance (Zhou et al., 2021).

5.1. Theoretical implications

The findings of this study make several contributions to the extant literature. First, our findings address the recent call to explore more potential antecedents of cyberloafing behavior (Mercado et al., 2017). Specifically, the present study reveals that exposure to COVID-19 concerns represents significant stressors that can spill over and escalate into cyberloafing. This spillover effect is consistent with previous applications of COR theory, indicating that resource loss in external domains (e.g. exposure to terror attacks) may drain one’s resources in the workplace (Toker et al., 2015). In addition, according to the COR theory, the negative effect of external stressors can be buffered and mitigated if individuals use personal (e.g. optimism) or interpersonal (e.g. social support) resources (Hobfoll, 2001). These resources may help employees handle the pandemic stressors (Reizer et al., 2021,2022).

Second, following previous scholars’ calls to consider IU aspects in the social and organizational contexts, this study offers new insights into how IU might contribute to cyberloafing—an unexplored area of research. IU originated in clinical psychology with an emphasis on emotional disorders (Carleton, 2016); thus, it has rarely been explored in a non-clinical organizational, educational, or social context. However, there appears to be initial evidence that IU is steadily rising in the population and is significantly associated with increased smartphone use (Carleton et al., 2019). Our findings further strengthen the position of IU as a characteristic with clear manifestation of cyberloafing, which can provide a theoretical basis for further investigation of cyberloafing in a more theoretical context.

In addition, we applied the COR theory beyond the study of stress and strain. This study is important not only because it extends the reach of the COR theory, but because it provides unique opportunities to better understand how individuals allocate and conserve resources in the context of the pandemic and the behavioral outcomes of it. Much of the work has focused on the associations between stress and strain, such as burnout and emotional exhaustion (Hobfoll et al., 2018). Recently, this body of work has been expanded to other realms of employees’ functioning during COVID-19, such as work withdrawal (Chong et al., 2020) and innovative performance (Zhong et al., 2022). Our work addresses Hobfoll et al.’s (2018) call to extend the line of thinking beyond stress, burnout, and strain to advance theory and practice in different contexts. Extending this line of thinking offers some interesting insights into the relationships with cyberloafing.

Finally, the results contribute to extending the understanding of COR by explaining the effect of psychological distress on the loss of resources during pandemics. The ongoing COVID-19 pandemic has disrupted many lives, and students are one of the most affected groups (Bendau et al., 2021; Chavan et al., 2021). The sudden switch to online learning, increasing leisure activities at home, and the substantial increase in mobile phone usage to play games or watch online content are some of the visible and reported changes during COVID-19 (Wu et al., 2021). According to recent studies, these changes have resulted in anxiety and depression among young people, which has, in turn, led to mental instability and deaths (Raja et al., 2020; Rettie & Daniels, 2021; Satici et al., 2020). Unlike the effects of an emergency or natural disaster on people’s routines, COVID-19 is having prolonged effects.

As the world continues to deal with different COVID-19 variants, the perceived threat may further affect people’s productivity, and they may resort to activities such as cyberloafing as they continue working at home (Tandon et al., 2021; Zhong et al., 2022). Recent reports on work productivity in developing and developed countries have confirmed that more than 64% of people working from home are 31% less productive, on average, compared with before COVID-19 (Chen et al., 2021; Usman et al., 2021). Of the many reasons reported, Zhu et al. (2021) found that the autonomous nature, unmonitored working environment, flexible deadlines, callous attitude toward work, and unnecessary use of mobile phones for unproductive tasks during work hours make people stressed, which further forces them to engage in cyberloafing. Thus, our study helps confirm our assertions during the pandemic.

5.2. Practical implications

Globally, cyberloafing is a significant organizational challenge (Kim et al., 2015; Mashal, 2020), and social distancing resulting from the pandemic has emphasized the phenomenon. Technological advancements have been rapid, and employees have unprecedented access to highly interactive, easily accessible, and convenient distractions. Specifically, smartphones and the internet allow constant access to broadband internet to stream content, communicate with others, shop online, and engage in social communication (e.g. Facebook and Instagram). These distracting features may be particularly appealing to individuals experiencing psychological distress who are seeking to ease negative emotional states (Squires et al., 2021). Based on our research findings, we suggest that some individuals are more prone to high levels of psychological distress, and they may be more tempted to cope with their negative emotions by using cyberloafing as a method of distraction. Understanding that cyberloafing may be a manifestation of underlying psychological distress, fear, and uncertainty may help with understanding why some people are not fully engaged in their tasks and opt for excessive cyberloafing behavior instead. This, in turn, may encourage organizations to focus on their employees’ wellbeing and mental health as a protective shield from cyberloafing.

Recognizing the predictors of cyberloafing will enable practitioners to understand, guide, and control this behavior. Based on our research findings, we advise managers and human resource (HR) practitioners to
establish communication channels so employees can share their fears, concerns, and feelings of uncertainty about COVID-19 (Sanders et al., 2020). It has been suggested that employees who perceive organizational injustice also tend to increase their cyberloafing (Marsh, 2020; Mercado et al., 2017). Thus, fair organizational policies and practices can contribute to reducing COVID-19 concerns and increasing wellbeing and productive behaviors.

In addition, organizations should help employees to relieve anxiety by offering training and webinars on topics such as resilience, stress management, and the benefits of tolerance during uncertain times. Employees’ participation in such programs might also improve the safety climate and have positive consequences for wellbeing, as well as lowering counterproductive behavior.

Finally, this study offers guidelines for organizations and institutions that continue to have a work-from-home culture in the midst of the COVID-19 pandemic. The issue of cyberloafing could be controlled by enabling people to work in teams to reduce individual stress and improve the participation of employees and students (Soga et al., 2022). Some organizations require their employees to report the status of their work too frequently, which can also lead to stress. Recent studies have reported that such frequent reporting behavior causes a reverse reaction of losing attention, and employees tend to distract themselves and become trapped by cyberloafing behavior. However, positive psychological changes adopted by firms and institutions could help combat the issue of cyberloafing. The recent adoption of mechanisms such as gamification have helped improve employees’ motivation toward work and performance during COVID-19.

We also shed light on the use of cyberloafing as a crisis response. We believe that the causes of cyberloafing during the pandemic may differ from those that have been explored in the past in the context of remote work, largely because pre-pandemic remote work was optional. Remote working is now mandatory and the “new normal” during the pandemic, thus changing the nature of the workload and the time spent on tasks. Because many employees working from home during the pandemic had no previous experience (Kniffin et al., 2021), they faced several challenges related to remote work, including work-home interference, ineffective communication, procrastination, loneliness, lack of social support, job autonomy, monitoring, and an increase in workload and self-discipline, which has led to an increase in cyberloafing (Soga et al., 2022; Wang et al., 2021). Our results highlight the need to assist organizations and employees to transition smoothly and promptly to remote working without compromising on their wellbeing. This is especially relevant both during and after the pandemic because some organizations have expressed their intent to implement permanent telework for their employees after the pandemic (Chong et al., 2020). The COVID-19 pandemic has unearthed an unstudied domain within cyberloafing. Many organizations had little choice but to hastily transition to mandatory, full-time telework to counter the spread of COVID-19. This mandatory form of full-time telework has removed a large degree of flexibility or volition that telework previously offered to workers (Wang et al., 2021).

6. Limitations, future research Agenda, and conclusions

6.1. Limitations of the study

This study discussed the important topic of cyberloafing, which has gained more importance during the COVID-19 pandemic. While the results shined a positive light on the proposed relationships, the study suffered from some limitations. First, all measures were self-reported, which raised the potential for common method biases. To minimize the method bias, we undertook several actions (e.g. separating our survey measurements, assuring confidentiality, emphasizing anonymity) (Podsakoff et al., 2003). We also conducted CFA to demonstrate the discriminant validity of the measurements and indicate that common method bias was not a significant limitation. Second, the study examined cyberloafing among relatively high-educated participants and was conducted among employees who study an academic course; therefore, it would be valuable to obtain more diverse samples. Third, our study was correlational in nature.

6.2. Future research agenda

Cyberloafing is an emergent topic; there is much scope to study cyberloafing and its mechanisms among different populations and settings. While our study provides an interesting and novel perspective, we drew on a limited number of respondents from the education sector. Future research should investigate other institutions, industries (e.g., military, police, hospitals, IT sector), variety of tasks (e.g., learning vs. performing routine tasks), age groups, genders, and demographic variables. Researchers should also further validate our findings in different cultural contexts, as proposed by Sobh and Perry (2006). For example, intercultural comparisons between Western and Eastern countries can be conducted to establish the generalizability of the results.

In addition, future studies could use other measurements, such as assessing cyberloafing using managerial reports or technological monitoring behaviors using phone applications. To understand causal relationships, we recommend that future studies examine our model using an experimental and longitudinal designs. The longitudinal design might also capture whether the COVID-19 environment, in general, and the lockdown periods, in particular, have long-lasting effects, as some researchers have argued (Brooks et al., 2020).

This study explored the relationships between distress, fear of COVID-19, and IU leading to cyberloafing from a psychological perspective. Future studies should expand on other aspects of COVID-19 related to cyberloafing behavior, such as confusion and loneliness, and sadness due to the loss of a family member or job. Future research could also examine the relationship between employees’ attitudes and cyberloafing.

Our research highlights that organizations need to explore new methods for reducing the negative consequences of COVID-19. An immediate intervention could be to reduce the aversiveness of IU and fear of COVID-19 and to provide both a psychologically and physically safe environment. In addition, as remote work continues to become more ubiquitous, it will be valuable to study the benefits and challenges of cyberloafing during the pandemic in order to help remote workers.

Finally, further research is needed to better understand the antecedents and consequences of cyberloafing. As technology continues to advance and present new features, the attraction to quick access to entertainment and diversions will further increase cyberloafing. Thus, organizations and institutions need to find ways to productively divert this energy toward work-oriented tasks through incentives and targets for work tasks online. Additional studies are needed to better understand the motivations of cyberloafing.

6.3. Conclusion

This study explored cyberloafing and identified some of the challenges and consequences of working with digital platforms and technologies while working remotely. Specifically, it highlighted concerns that have emerged during the COVID-19 pandemic in an educational setting. During this global crisis, many employees around the world have suffered from stress, anxiety, and uncertainties. While there is still much to be understood about the effect of the current pandemic on employees and organizations, the present study offers critical insights into people’s cyberloafing during the lockdown phases of this crisis.

Our findings provide valuable information on the relationship of fear of COVID-19 and IU on cyberloafing, and the important mediating role of psychological distress. This study contributes to and advances research in this discipline by detailing how organizations can be more aware of the negative effect of fear and uncertainties during COVID-19 on the counter-behavioral aspect of cyberloafing. Because the pandemic
is still an ongoing phenomenon and its effects are likely to be long-standing (Brooks et al., 2020), managers and HR practitioners should be more aware of the pandemic’s contextual risks and may need to change structures and organizational processes to mitigate its effects. Technology is a boon, but it can also be a bane if it is not used prudently.

Declarations of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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