



AMERICAN
PSYCHOLOGICAL
ASSOCIATION

Journal of Occupational Health Psychology

Manuscript version of

Workplace

Incivility and Employee Sleep: The Role of Rumination and Recovery Experiences

Caitlin A. Demsky, Charlotte Fritz, Leslie B. Hammer, Anne E. Black

Funded by:

- National Science Foundation
- Oakland University, School of Business Administration
- US Department of Agriculture, Forest Service

© 2018, American Psychological Association. This manuscript is not the copy of record and may not exactly replicate the final, authoritative version of the article. Please do not copy or cite without authors' permission. The final version of record is available via its DOI: <https://dx.doi.org/10.1037/ocp0000116>

This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.



CHORUS *Advancing Public Access to Research*

**Workplace Incivility and Employee Sleep:
The Role of Rumination and Recovery Experiences**

Caitlin A. Demsky
Oakland University

Charlotte Fritz
Portland State University

Leslie B. Hammer
Portland State University
Oregon Health & Science University

Anne E. Black
USDA Forest Service, Rocky Mountain Research Station

Author's Note

Caitlin A. Demsky, Department of Management & Marketing, Oakland University; Charlotte Fritz, Department of Psychology, Portland State University; Leslie B. Hammer, Department of Psychology, Portland State University and Oregon Institute of Occupational Health Sciences, Oregon Health and Science University; and Anne E. Black, USDA Forest Service, Rocky Mountain Research Station.

We thank Dana Auten for her assistance with proofreading and editing. The research, analysis and other work documented in this publication was funded by the USDA Forest Service through Agreement #14-JV-11221611-109; however the findings, conclusions, and views expressed are those of the authors and do not necessarily represent the views of the USDA Forest Service. The first author was also supported during the course of this work by a National Science Foundation Graduate Research Fellowship under Grant DGE-1057604. Any opinions, findings,

conclusions, or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation. An earlier version of this paper was presented at the 2017 Annual Society for Industrial & Organizational Psychology Conference in Orlando, Florida.

Correspondence concerning this article should be addressed to Caitlin A. Demsky, Department of Management & Marketing, Oakland University, 275 Varner Drive, Rochester, MI, 48309-4485. E-mail: cademsky@oakland.edu

Abstract

This study examines the role of negative work rumination and recovery experiences in explaining the association between workplace incivility and employee insomnia symptoms. Drawing on the perseverative cognition model of stress and the effort-recovery model, we hypothesize a moderated mediation model in which workplace incivility is associated with insomnia symptoms via negative work rumination. This indirect effect is proposed to be conditional on employees' reported level of recovery experiences (i.e., psychological detachment from work, relaxation during nonwork time). In examining this model, we further establish a link between workplace incivility and sleep, and identify one pathway to explain this relationship, as well as resources that may be used to halt the negative spillover of workplace incivility on sleep. Based on a sample of 699 US Forest Service employees, we find support for a moderated mediation model in which the association between workplace incivility and increased insomnia symptoms via increased negative work rumination was weakest for employees reporting high levels of recovery experiences during nonwork time. Findings from the current study contribute to our understanding of why workplace incivility is associated with nonwork outcomes, as well as point to implications for interventions aimed at promoting employees' recovery from work.

Keywords: workplace incivility, negative work rumination, psychological detachment, relaxation, sleep quality

Estimates suggest that workplace incivility is on the rise – in 1998 one study found that nearly half of employees surveyed reported being treated rudely at work at least once a month (Porath, 2015). By 2011 those numbers had increased to 55 percent, and to 62 percent by 2014 (Porath, 2016). Some estimates suggest that as many as 98% of U.S. employees have experienced uncivil behavior in the workplace (Porath & Pearson, 2013). Victims of incivility are more likely to decrease their work effort, organizational commitment, and the amount of time spent at work, all of which have implications for organizational performance. While several studies have indicated a range of negative outcomes associated with workplace incivility (Herscovis, 2011; Pearson, Andersson, & Porath, 2000; Schilpzand, De Pater, & Erez, 2016), much less is known regarding the mechanisms through which workplace incivility negatively influences both work and nonwork outcomes. There also remains a lack of understanding regarding resources that can mitigate the harmful effects of workplace incivility. We chose to examine the association between workplace incivility and sleep in the current manuscript, as organizational researchers have begun to increasingly examine sleep as a critical component of employee well-being and performance (i.e., decision-making and safety; Barnes, 2012; Litwiller, Snyder, Taylor, & Steele, 2017; Wickens, Hutchins, Laux, & Sebok, 2015). The current study seeks first to establish an association between workplace incivility and insomnia symptoms, one indicator of sleep quality; second, to understand the mechanisms through which this association occurs; and third, to demonstrate how engaging in nonwork recovery experiences – namely, psychological detachment from work and relaxation – can mitigate the association between workplace incivility and insomnia symptoms.

Workplace incivility has been described as “low-intensity deviant behavior with ambiguous intent to harm the target, in violation of workplace norms for mutual respect”

(Andersson & Pearson, 1999, p. 457). Workplace incivility affects a range of employee and organizational outcomes, including reduced job satisfaction, psychological well-being, physical well-being, and affective commitment, and increased turnover intentions, stress, work-to-family conflict, and counterproductive work behavior (Hershcovis, 2011; Schilpzand et al., 2016; Welbourne & Sariol, 2017).

To date, the majority of research on workplace incivility has focused on identifying antecedents (Hershcovis et al., 2007) and outcomes (Hershcovis & Barling, 2010) of incivility. Far less work has been done to explain *why* workplace incivility is associated with detrimental outcomes (Schilpzand et al., 2016). From the perspective of both researchers and practitioners, it is critical to identify these mechanisms because they may serve as potential targets for workplace interventions. Similarly, while a number of studies have examined the link between workplace incivility and health-related outcomes, far fewer have explored sleep as an outcome. Identifying workplace predictors of employee sleep is particularly important because sleep plays a critical role in how employees interpret information and behave at work (Budnick & Barber, 2015). In the current study, we focus on negative work rumination as one mechanism that may explain the association between workplace incivility and insomnia symptoms.

Rumination refers to a preoccupation with and repetitive thoughts of an event or common theme (Martin & Tesser, 1996). In the current study, we focus specifically on negative work rumination, which refers to a preoccupation with earlier negative work experiences and an inability to switch off from work-related thoughts (Cropley, Michalianou, Pravettoni, & Millward., 2012; Frone, 2015), and which may occur during nonwork hours. Negative work rumination has been associated with several health problems, including cardiovascular diseases, negative mood, and sleep disturbances (see Cropley & Zijlstra, 2011 for a review). It has also

been identified as a mechanism explaining the relationship between several work stressors and strain outcomes, including negative work experiences and alcohol use (Frone, 2015), effort-reward imbalance, time pressure, and sleep (Berset, Elfering, Lüthy, Lüthi, & Semmer, 2011), and work-family conflict and health (Davis, Gere, & Sliwinski, 2016).

While negative work rumination represents a continued preoccupation with work events, recovery from work presents an opportunity for employees to separate themselves from the work context. Research on recovery from work during nonwork time (i.e., experiences that allow for the halting of resource loss and rebuilding of internal resources) has identified psychological detachment and relaxation as key experiences associated with improved well-being.

Psychological detachment refers to the process of mentally and physically separating oneself from work demands (Etzion, Eden & Lapidot, 1998). Research has linked a lack of psychological detachment to a number of work and well-being related outcomes, including increased strain, burnout, and reduced life satisfaction (see Sonnentag & Fritz, 2015 for a recent review). While experiences such as workplace incivility have been associated with reduced psychological detachment (e.g., Demsky, Ellis, & Fritz, 2014; Volmer, Binnewies, Sonnentag, & Niessen, 2012), psychological detachment has also been shown to buffer the association between various job demands (e.g., time pressure, work hours, workload) and strain outcomes, including fatigue, burnout, and depression (Sonnentag, Binnewies, & Mojza, 2010; Sonnentag & Fritz, 2015).

Relaxation is a state of low activation and higher levels of positive affect (Stone, Kennedy-Moore, & Neale, 1995). Activities such as yoga, mindful breathing, and taking a walk may all result in relaxation. Relaxation has been associated with higher levels of positive mood and vigor, and lower levels of negative mood and exhaustion (Fritz, Ellis, Demsky, Lin, &

Guros, 2013; Sonnentag, Binnewies, & Mojza, 2008). It has also been linked to fewer health complaints, depressive symptoms, sleep problems, and lower need for recovery, as well as higher life satisfaction (Sonnentag & Fritz, 2007).

Previous research has indicated that the impacts of incivility may depend on the source from which incivility is experienced – namely, supervisors, coworkers, or outsiders (i.e., customers). Though researchers have called for the distinction of these sources in research, practical considerations often limit the ability to collect such data. Findings from Hershcovis and Barling (2010) suggest such distinctions are worth identifying, as they can help to make more specific, targeted practical recommendations for employees and employers alike. In line with calls to differentiate sources, the current study examines both supervisor and coworker-initiated workplace incivility. While these distinctions provide practical and theoretical value, we do not make differential hypotheses as to their effects in our study given that prior research has not found differential effects of incivility when examining health-related outcomes (Hershcovis & Barling, 2010). We examine effects from both sources to provide a more detailed examination of the potential source-related effects of incivility on employee insomnia as a health-related outcome.

In sum, the current research fills three specific gaps in the literature surrounding workplace incivility and recovery from work. First, little is known regarding the mechanisms through which workplace incivility is associated with nonwork outcomes such as sleep. This study seeks to address this limitation by identifying negative work rumination as one such mechanism. Second, the current study identifies two recovery experiences – namely, psychological detachment and relaxation – as moderators that may buffer the negative relationship between incivility and employee sleep. Finally, we answer repeated calls to

distinguish the source of workplace incivility by comparing the relationships of both supervisor and coworker-initiated workplace incivility with employee outcomes. In doing so, we identify potential avenues for employee and organization-focused interventions.

Theoretical Background

Perseverative cognition model of stress

Perseverative cognition refers to the degree to which an individual continually recalls a past experience (words, gestures, etc.), such as when a victim of workplace incivility replays the act of incivility in their mind long after the workday has concluded (Brosschot, Pieper, & Thayer, 2005). The perseverative cognition model of stress proposes perseverative cognition as one mechanism through which stress is linked to strain, and in particular, somatic symptoms and eventual disease. Rumination is one way to measure perseverative cognition, in that an individual may find it difficult to stop thinking about a past event, or may be anticipating a future event – in this case, incidents of workplace incivility.

Evidence suggests that forms of perseverative cognition, including worry and rumination, can explain the link between prolonged effects of stressors on strain outcomes. Specifically, exposure to stressors is associated with increased perseverative cognition, which is in turn associated with increases in strain outcomes. Brosschot, Verkuil, and Thayer (2010) review a number of these findings, which show that worry or rumination can slow both cortisol and cardiovascular recovery. In one study, worry explained the relationship between prolonged autonomic activity during waking as well as sleeping (Brosschot, van Dijk, & Thayer, 2007). In line with this model and its supporting research, we identify negative work rumination as one such mechanism explaining the association between workplace incivility and reduced sleep quality.

Effort-recovery model

The effort – recovery model posits that acute load reactions (e.g., increased blood pressure, affective distress) to work demands will over time develop into more chronic load reactions in the event of incomplete recovery opportunities (Geurts & Sonnentag, 2006; Meijman & Mulder, 1998). Recovery occurs when work demands are no longer present, and employees' psychophysiological systems are allowed to return to pre-stressor levels. Sonnentag and Fritz (2007) have suggested that psychological detachment and relaxation during nonwork time are two such recovery experiences that allow systems to return to pre-stressor levels after the removal of work demands. Several activities have been suggested as fostering these recovery experiences, including exercise, volunteering, meditation, taking a walk, and listening to music.

In the current study, negative work rumination may represent a pathway in which a preoccupation with work demands (e.g., workplace incivility) during nonwork time prevents one's psychophysiological systems from returning to baseline. Whereas psychological detachment and relaxation may serve as an opportunity to halt the negative spillover process (i.e., when effects of work and family produce similarities between the two domains; Edwards & Rothbard, 2000), thereby allowing employees to recover. Research on recovery training programs (e.g., Hahn, Binnewies, Sonnentag, & Mojza, 2011) suggests that employees may be able to engage in recovery during nonwork time even in the face of work stressors. Drawing on both the perseverative cognition model of stress and the effort-recovery model, we propose a model in which the indirect effects of workplace incivility on insomnia symptoms via negative work rumination is conditional on recovery experiences. Specifically, we investigate whether the indirect effect of workplace incivility on insomnia symptoms is weaker for employees who

engage in higher levels of recovery experiences. The full proposed model can be seen in Figure 1.

Insert Figure 1 About Here

Workplace Incivility, Negative Work Rumination, and Insomnia Symptoms

Workplace incivility suggests a violation of social norms of civility and can leave victims questioning their place in the organization and reflecting on the experience long afterwards (Pearson et al., 2000). Workplace incivility has been linked to rumination in both victims (Shapiro, 2013) and bystanders (Porath, MacInnis, & Folkes, 2010), as well as decreased psychological detachment from work during nonwork time (Demskey et al., 2014; Nicholson & Griffin, 2015; Volmer et al., 2012). In a recent experimental manipulation, experiencing incivility from a team member was associated with increased self-blame and in turn, higher levels of rumination, particularly for those who experience incivility without witnesses (Schilpzand, Leavitt, & Lim, 2016). In line with the perseverative cognition model of stress, we posit that workplace incivility is one job stressor that may activate prolonged or repetitive thinking about work-related events after work has ended (i.e., negative work rumination).

Hypotheses 1: (a) Supervisor and (b) coworker incivility is associated with increased negative work rumination.

In addition to associations with cognitive outcomes such as rumination, workplace incivility may also directly affect the quality of one's sleep. Limited research has examined associations between incivility and sleep, though some support has been found for this relationship (Bayne, 2015; Gilin Oore et al., 2010; Holm, Torkelson, & Bäckström, 2015;

Yamada, 2000). Generally, workplace incivility has been associated with negative impacts on broad measures of physical health (Lim, Cortina, & Magley, 2008). Workplace bullying, a more extreme form of workplace incivility, has been associated with poor sleep quality (Magee et al., 2015; Nabe-Nielsen et al., 2016; Niedhammer, David, Degioanni, Drummond, & Philip, 2009; Takaki et al., 2010), while at least one qualitative study has also linked workplace aggression to disturbed sleep (Glomb, 2002). Job demands more generally have been associated with reduced sleep quality (De Lange et al., 2009; Litwiller et al., 2017; Van Laethem, Beckers, Kompier, Kijksterhuis, & Geurts, 2013), so it also stands to reason that workplace incivility would be associated with reductions in sleep quality. In the current study, we examine insomnia symptoms as an indicator of poor sleep quality. Insomnia symptoms include difficulty falling asleep, difficulty maintaining sleep, or experiencing nonrestorative sleep (Jenkins, Stanton, Niemcryk, & Rose, 1988).

Hypothesis 2a-b: (a) Supervisor and (b) coworker incivility is positively associated with insomnia symptoms.

Negative work rumination represents an inability to ‘let go’ of work events after the work day is over, and as such, may impair one’s ability to sleep soundly at night. Both theory and prior empirical work suggests that negative work rumination may serve as a link between workplace incivility and poor sleep quality. Relevant to the current study, work-related rumination has been associated with reduced sleep quality, including insomnia and longer time to fall asleep (Guastella & Moulds, 2007; Querstret & Cropley, 2012; Thomsen, Mehlsen, Christensen, & Zacharie, 2003; Vahle-Hinz, Bamberg, Dettmers, Friedrich, & Keller, 2014; Watkins, 2008). Both trait and stressor-specific rumination have also been linked to longer time to fall asleep (Zoccola, Dickerson, & Lam, 2009). As suggested by the perseverative cognition model of

stress, negative work rumination may serve as the mechanism through which job stress impairs employees' physical health (measured here as increased insomnia symptoms). In the present study, continued cognitive activation may be expected to prevent individuals from achieving quality sleep.

Hypothesis 3: Negative work rumination is associated with increased insomnia symptoms.

The perseverative cognition model of stress hypothesizes that perseverative cognitions (i.e., rumination) serve as a link between stressors and strain outcomes, and research has begun to accumulate in support of this hypothesis. Perseverative cognition has been found to mediate the relationship between general work stress and sleep quality (Van Laethem et al., 2015), while worry, a related construct, mediates the link between workplace bullying and reduced sleep quality (Rodríguez-Muñoz, Notelaers, & Moreno-Jiménez, 2011). Related to the current study, prior research has found support for rumination as the explanatory link between workplace incivility and work-related outcomes such as performance and revenge motives (Shapiro, 2013), and between work stressors and impaired sleep (Berset et al., 2011). Related to the effort-recovery model, engaging in negative work rumination after work may call upon similar psychophysiological systems as work demands, and therefore prevent effective recovery from occurring. In the current study, we propose that negative work rumination serves as a link between experiences of workplace incivility and insomnia symptoms.

Hypotheses 4a-b: The association between (a) supervisor and (b) coworker incivility and insomnia symptoms will be mediated by negative work rumination.

The Role of Recovery Experiences

In line with previous research examining recovery experiences as moderators, we suggest that psychological detachment and relaxation may serve as buffers of the stressor-strain relationship even after accounting for the underlying role of perseverative cognition in this process (Brosschot et al., 2005, 2010). While some support has been found for the indirect effect of work stressors on sleep via rumination, other studies have failed to find support for this pathway (Vahle-Hinz et al., 2014), suggesting these associations may be conditional on other factors. In line with the effort-recovery model, Geurts and Sonnentag (2006) suggested that a cognitive stress-related process, including rumination, might explain the relationship between stressful work characteristics and more chronic load reactions, and further, that sufficient recovery may be able to mitigate this relationship.

Recent research has connected psychological detachment to improved sleep quality (Barber & Jenkins, 2014; Hülshager et al., 2014). At the day-level, psychological detachment during the evening has been associated with less fatigue the following morning and better sleep quality (Hülshager et al., 2014; Sonnentag et al., 2008). Psychological detachment has also been identified as a moderator of the stressor-strain relationship, for example, between workplace bullying and psychological strain (Moreno-Jiménez, Rodríguez-Muñoz, Pastor, Sanz-Vergel, & Garrosa, 2009), emotional conflicts at work and poor well-being (Sonnentag, Unger, & Nägel, 2013), and daily distress at work and next-morning distress after incivility at work (Park, Fritz, & Jex, 2015). Psychological detachment is theoretically and conceptually distinct from rumination, and is not the same as a lack of rumination. While negative work rumination represents an active cognitive preoccupation with work events, either in an attempt to solve work problems or anticipate future work problems, psychological detachment represents an avoidance of work-related thoughts, actions, or emotions (Sonnentag & Fritz, 2007). Prior research indicates that

they are also related to different outcomes – for example, rumination has been associated with increased depressed mood, while distraction – similar to detachment – is associated with reduced depressed mood (Morrow & Nolen-Hoeksema, 1990). Psychological detachment can be fostered through a variety of specific activities, including exercise or spending time with family. Thus, we propose that psychological detachment will serve as a moderator of the relationship between negative work rumination and insomnia symptoms. Further, we hypothesize that the indirect relationship between incivility and insomnia symptoms via negative work rumination will be conditional on psychological detachment.

Hypothesis 5a: Psychological detachment will moderate the association between negative work rumination and insomnia symptoms, such that the association will be weaker for those who report higher levels of psychological detachment.

Hypotheses 5b-c: The indirect effect of (b) supervisor and (c) coworker incivility on insomnia symptoms via negative work rumination is conditional on psychological detachment. The indirect effect is weaker for employees who report higher levels of psychological detachment.

To date, fewer studies have focused on the role of relaxation. Relaxation has been associated with increased morning serenity and life satisfaction, fewer health complaints, sleep problems, and less exhaustion and need for recovery (Sonnentag & Fritz, 2007; Sonnentag et al., 2008). Relaxation has also been identified as a moderator of the association between work characteristics and occupational well-being, including between time demands and exhaustion (Siltaloppi, Kinnunen, & Feldt, 2009), and job insecurity and need for recovery from work (Kinnunen, Mauno, & Siltaloppi, 2010). As suggested by the effort-recovery model, relaxation provides an opportunity for individuals to halt work-related demands, which is critical for

restoring individuals to their prestressor state. In the context of this study, we hypothesize that relaxation during nonwork time will serve as a moderator of the relationship between negative work rumination and insomnia symptoms. In addition, the indirect relationship between incivility and insomnia symptoms via negative work rumination will be conditional on relaxation.

Hypothesis 6a: Relaxation will moderate the association between negative work rumination and insomnia symptoms, such that the association will be weaker for those who report higher levels of relaxation.

Hypotheses 6b-c: The indirect effect between (b) supervisor and (c) coworker incivility and insomnia symptoms via negative work rumination is conditional on relaxation. The indirect effect is weaker for employees who report higher levels of relaxation.

Method

Participants and Procedure

After receiving approval from the authors' research ethics committee, employees of the United States Department of Agriculture (USDA) Forest Service in the Southwestern United States were recruited via email to participate in the current study. Of a potential 2,256 employees, 781 accessed the survey (34.6% response rate). Of the 781 participants who accessed the survey, 699 provided useable data (31% response rate). Participants were removed from the final sample if they failed to provide any responses to the key variables examined in the current study. On average, participants were 48 years old ($SD = 10.84$), with 16.67 years ($SD = 10.12$) of experience with the USDA Forest Service and 6.95 years ($SD = 6.23$) of experience in their current position. Females comprised 49.2% of the sample, while 47.2% were male (the remaining 3.6% of respondents chose not to identify their gender). Participants identified as White (56.5%), African-American (0.7%), Hispanic/Latino (13.0%), Native American (3.0%),

Asian (0.3%), and Native Alaskan or Pacific Islander (0.3%). An additional 21% of participants chose not to self-identify their ethnicity. A total of 41% of participants classified their current jobs as supervisory, while 59% were in non-supervisory positions. On average, participants reported working five days a week ($SD = 0.42$) and 41.77 hours per week ($SD = 10.30$). Participants were employed in a variety of capacities for the Forest Service, including in resources (i.e., recreation, wildlife, timber), wildland fire, business operations, planning, and public affairs.

Measures

Workplace incivility. Workplace incivility was measured using the Workplace Incivility Scale (Cortina, Magley, Williams, & Langhout, 2001). Seven items referred to supervisor-initiated workplace incivility, and an additional seven items referred to coworker-initiated incivility. Participants were asked to indicate how often they had been subjected to each behavior over the past six months on a scale of 1 (*never*) to 5 (*most of the time*). An example item includes, “put you down or were condescending to you.” Cronbach’s alpha for this scale was .93 for both supervisor and coworker incivility.

Negative work rumination. Rumination was measured with five items referring to affective rumination (“the emotional experience of not being able to switch off from work related thoughts”; Cropley et al., 2012, p. 25), an example of which is, “Are you troubled by work-related issues when not at work?” Response options ranged from 1 (*very seldom or never*) to 5 (*very often or always*). Participants were asked to indicate how frequently they had experienced each indicator over the last six months. Cronbach’s alpha for this scale was .96.

Insomnia symptoms. Participants responded to four items on a scale from 1 (*less than once per month*) to 5 (*every day*; Jenkins et al., 1988) regarding the extent to which they

experienced insomnia symptoms over the previous six months. An example item includes, “Woke up several times during the night.” Cronbach’s alpha for this measure was .78.

Psychological detachment. Four items from the Recovery Experience Questionnaire (Sonnentag & Fritz, 2007) were used to measure psychological detachment from work. Participants were asked to indicate to what degree items reflected their free evenings over the previous six months on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Example items include, “I didn’t think about work at all” and “I distanced myself from my work.” Cronbach’s alpha for this scale was .86.

Relaxation. Four items from the Recovery Experience Questionnaire (Sonnentag & Fritz, 2007) were used to measure relaxation. Participants were asked to indicate to what degree items reflected their free evenings over the previous six months on a five-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Example items include, “I kicked back and relax,” and “I took time for leisure.” Cronbach’s alpha for this scale was .94.

Control variables. For all analyses, the number of children under 18 at home and hours worked per week were controlled for because both variables have previously been associated with sleep (Krueger & Friedman, 2009; Litwiller et al., 2017), and higher numbers of hours worked per week may also be linked to increased exposure to workplace incivility. Additionally, hours of work per week have been controlled for as a proxy for job demands in previous research (Nicholson & Griffin, 2015). We also controlled for frequency of alcohol use over the past six months with one item, “In the past six months, how often have you had an alcoholic drink” (1 = not at all, 2 = on occasion, 3 = often, 4 = all the time) as prior research has identified alcohol use as one potential behavioral predictor of insomnia (Ohayon, 2002).

Results

Preliminary Analyses

Descriptive statistics and bivariate correlations for all study variables are reported in Table 1. In line with past research, both supervisor ($r = -.18, p < .01$; $r = -.21, p < .01$) and coworker incivility ($r = -.16, p < .01$; $r = -.21, p < .01$) were negatively associated with psychological detachment from work and relaxation, respectively. Psychological detachment from work ($r = -.55, p < .01$) and relaxation ($r = -.41, p < .01$) were negatively associated with negative work rumination. In turn, negative work rumination was significantly associated with insomnia symptoms ($r = .37, p < .01$).

Insert Table 1 About Here

Confirmatory factor analyses were conducted to justify the examination of negative work rumination and psychological detachment from work as independent constructs, as well as the examination of psychological detachment and relaxation as separate recovery experiences. Regarding the former comparison, a two-factor model ($\chi^2 (26, N = 590) = 169.55, p < .01, CFI = .97, RMSEA = .097$), in which negative work rumination and psychological detachment were distinct constructs, fit the data better than a one-factor model ($\chi^2 (27, N = 590) = 832.50, p < .01, CFI = .82, RMSEA = .23$). Regarding psychological detachment and relaxation, a two-factor model ($\chi^2 (19, N = 567) = 200.63, p < .01, CFI = .95, RMSEA = .13$) also fit the data better than a one-factor model ($\chi^2 (20, N = 567) = 769.99, p < .01, CFI = .79, RMSEA = .26$). Taking all three variables into consideration, a three-factor model ($\chi^2 (62, N = 588) = 367.46, p < .01, CFI = .95, RMSEA = .09$) provided a better fit to the data than a one-factor model ($\chi^2 (65, N = 588) = 2874.34, p < .01, CFI = .60, RMSEA = .27$). The results of these confirmatory factor analyses

indicate the appropriateness of treating negative work rumination, psychological detachment, and relaxation as empirically distinct constructs.

Hypothesis Testing

Hypotheses 1 – 3 and 5 were tested using ordinary least squares regression models, while hypotheses 4 and 6 were tested using Models 4 and 14, respectively, of Hayes' (2013) PROCESS macro in SPSS 22.0. PROCESS uses an ordinary least squares regression-based path analytic framework to estimate direct and indirect effects, and allows for the estimation of moderated mediation (conditional indirect effect) models. PROCESS also provides several important statistics useful for testing mediation and conditional indirect effects, such as the index of moderated mediation, which require the combination of parameters across multiple equations (Hayes, Montoya, & Rockwood, 2017). Model 4 in this macro represents a simple mediation model (Hypothesis 4), while Model 14 represents a conditional indirect effects model in which an indirect effect is moderated at the b-path. Conditional indirect effects were probed for significance at ± 1 SD, and the index of moderated mediation was examined as an additional significance test for the conditional indirect effects. A significant index of moderated mediation indicates that “any two conditional indirect effects estimated at different values of the moderator are significantly different from one another” (Hayes, 2015, p. 2). In addition to following Hayes' (2013) guidelines for testing conditional indirect effects, we also modeled our analytical approach on recently published research (e.g., Fodor, Antoni, Wiedemann, & Burkert, 2014; Li, Shaffer, & Bagger, 2015; Liu, Yang, & Nauta, 2013). Control variables included number of children under 18 living at home, hours worked per week, and frequency of alcohol consumption.

Main Effects Results. Both supervisor incivility ($\beta = .48, t = 10.12, p < .001, \Delta R^2 = .16$) and coworker incivility ($\beta = .38, t = 6.83, p < .001, \Delta R^2 = .08$) were significantly positively associated with negative work rumination, providing support for Hypothesis 1. Both supervisor incivility ($\beta = .16, t = 3.53, p < .001, \Delta R^2 = .02$) and coworker incivility ($\beta = .21, t = 4.23, p < .001, \Delta R^2 = .03$) were also significantly associated with insomnia symptoms, indicating support for Hypothesis 2. Negative work rumination was significantly associated with insomnia symptoms ($\beta = .33, t = 9.38, p < .001, \Delta R^2 = .15$), providing support for Hypothesis 3.

Mediation Results. Hypothesis 4 proposed that the association between workplace incivility and insomnia symptoms would be mediated by negative work rumination and was tested using Model 4 of Hayes' (2013) PROCESS macro. Supervisor incivility was associated with insomnia symptoms indirectly through negative work rumination (Effect = .1558, $SE = .0247$, LowerCI = .1120, UpperCI = .2085). Similar results were found for the indirect association between coworker incivility and insomnia symptoms (Effect = .1192, $SE = .0220$, LowerCI = .0796, UpperCI = .1665). Significance of indirect effects was determined via bias-corrected bootstrap confidence intervals using 10,000 bootstrap samples and 95% confidence intervals. Significance of the indirect effect is indicated when confidence intervals do not include zero. These results provide support for Hypothesis 4.

Moderation Results. Hypotheses 5a and 6a proposed that the association between negative work rumination and insomnia symptoms would be weaker for those who experienced higher levels of psychological detachment and relaxation. Psychological detachment from work significantly moderated the association between negative work rumination and insomnia symptoms ($\beta = -.08, t = -2.27, p = .02$), while relaxation also served as a moderator of this relationship ($\beta = -.08, t = -2.15, p = .03$). These interactions show a similar pattern and can be

seen in Figures 2 and 3. Under conditions of low rumination, similar levels of insomnia symptoms are seen regardless of psychological detachment (or relaxation) levels. However, under conditions of high rumination, those who experience higher levels of psychological detachment (or relaxation) report fewer insomnia symptoms. These results indicate support for Hypotheses 5a and 6a.

Insert Figures 2 & 3 About Here

Moderated Mediation Results. Hypotheses 5b-c and 6b-c were tested using Model 14 of Hayes' (2013) PROCESS macro utilizing 10,000 bias-corrected bootstrapped samples. These hypotheses proposed a conditional indirect effects model that examines whether the indirect effect of workplace incivility on insomnia symptoms via negative work rumination would be weaker for those who experienced higher levels of psychological detachment from work and relaxation (see Figure 1). If the indirect effect of workplace incivility on insomnia symptoms through negative work rumination differs as a function of recovery experiences, this would indicate support for the hypothesis that recovery experiences moderate the proposed indirect effect.

As seen in Tables 2 and 3, the indirect effect of both supervisor and coworker incivility on insomnia symptoms was strongest at the lowest (-1SD) level of psychological detachment and relaxation and weakest for those who engaged in higher levels (+1SD) of psychological detachment and relaxation. To determine whether the indirect effect was contingent on psychological detachment and relaxation, we used PROCESS to calculate the index of moderated mediation. We found that the confidence intervals did not contain zero for any of the

models, except one in which the indirect effect of coworker incivility on insomnia symptoms was conditional on relaxation (Table 3). In this instance, confidence intervals overlapped with zero, indicating a nonsignificant conditional indirect effect. Overall, these results provide support for Hypotheses 5b-c and 6b, but fail to support Hypothesis 6c. These findings suggest that workplace incivility is linked to greater negative work rumination, which contributes to insomnia symptoms among those who report low levels of psychological detachment from work and relaxation.

*Additional Analyses.*¹ Given that the effort-recovery model posits that recovery occurs when work-related demands are no longer present, one might also posit that psychological detachment and relaxation could moderate the indirect effect of workplace incivility on insomnia symptoms via negative work rumination at the first stage of this indirect effect (i.e., recovery experiences may moderate the link between workplace incivility and negative work rumination). We tested this model using Model 7 of Hayes' (2013) PROCESS macro in SPSS 22.0, and found that the indirect effects of supervisor and coworker incivility on insomnia symptoms via negative work rumination were not conditional on either psychological detachment or relaxation at the first stage of this indirect effect. For each of the alternative models, the confidence intervals of the index of moderated mediation contained zero (supervisor incivility, psychological detachment: Effect: .0027, SE = .0163, LLCI = -.0288, ULCI = .0360; supervisor incivility, relaxation: Effect: .0141, SE = .0201, LLCI = -.0232, ULCI = .0566; coworker incivility, psychological detachment: Effect: -.0012, SE = .0152, LLCI = -.0327, ULCI = .0276; coworker incivility, relaxation: Effect: .0007, SE = .0149, LLCI = -.0278, ULCI = .0320).²

¹ We thank an anonymous reviewer for this suggestion.

² Full results are available from the first author upon request.

Insert Tables 2 & 3 About Here

Discussion

The current study examined the indirect effect of workplace incivility on insomnia symptoms through negative work rumination, and whether this indirect effect was conditional on one's level of recovery experiences. Overall, we found support for the proposed model. Specifically, workplace incivility was associated with increased negative work rumination. In turn, negative work rumination was associated with increased insomnia symptoms. Evidence suggests a mediated relationship, in which negative work rumination is one mechanism that may explain the association between workplace incivility and increased insomnia symptoms. We examined two recovery experiences – namely, psychological detachment from work and relaxation – as potential moderators of this indirect effect. Importantly, the impact of workplace incivility on insomnia symptoms through negative work rumination was found to be conditional on the recovery experiences of psychological detachment and relaxation. Generally, these indirect effects were weakest for individuals who engaged in higher levels of psychological detachment from work and relaxation. Results were similar for both supervisor and coworker incivility, with the exception of relaxation as a moderator of the indirect effect of coworker incivility on insomnia symptoms. These findings suggest several opportunities for organizational interventions aimed at reducing the negative spillover of workplace incivility and promoting employee recovery from work during nonwork time, which we discuss in the following paragraphs.

Theoretical Implications

In the current study, we conceptualized negative work rumination as a mechanism that may explain the association between workplace incivility and impaired sleep. In line with the perseverative cognition model of stress, we found support for this indirect effect, which adds to the growing body of research in support of this theory (e.g., Brosschot et al., 2005, 2007, 2010). This study extends these findings into the field of occupational health psychology, and provides support for the perseverative cognition model of stress as an appropriate explanatory theory when identifying rumination or worry as a key mediator. In conceptualizing recovery experiences (i.e., psychological detachment from work and relaxation) as one way to halt the negative spillover from work to the nonwork domain, we drew on the effort-recovery model, which suggests that recovery occurs when work demands are no longer present. Our findings in support of psychological detachment and relaxation as moderators of the indirect effect of workplace incivility on insomnia symptoms via negative work rumination also provide empirical support for the conceptual model proposed by Geurts and Sonnentag (2006), in which recovery can mitigate the negative effects of work stress on chronic health outcomes.

Finally, we add to the research on workplace incivility by examining both supervisor and coworker incivility in our present study. Associations were fairly similar across supervisor and coworker-initiated incivility, which is in line with prior research examining health-related outcomes across sources of incivility (Hershcovis & Barling, 2010). Because well-being outcomes are more general and not organization-focused, source may play less of a role in influencing these outcomes. Regardless of the source, employees experience incivility as a stressor, which in turn will lead to strain outcomes if sufficient recovery does not occur. In addition to these considerations, our results also suggest potential target points for reducing the

negative impact of workplace incivility and subsequent negative work rumination on sleep quality.

Practical Implications

Our study identifies the role of several conditions that impact sleep, thus providing managers with opportunities to craft potentially valuable interventions. Specifically, this research supports the intuitive hypotheses that incivility in the workplace is negatively associated with sleep quality. It does so in part by stimulating people to ruminate on their negative work experiences. Those who can detach themselves mentally from this cycle fare better, that is, do not suffer as much sleep disruption as those who are less capable of detachment. It suggests a two-pronged approach to interventions: address workplace incivility (such as by raising awareness, ensuring protections and accountability, training and modeling appropriate behavior; and training supervisors on aggression prevention behaviors; Porath & Pearson, 2010; Yang & Caughlin, 2017) and improve emotional resilience skills (such as offering trainings on recovery from work and mindfulness practices, emotional/social intelligence skills, etc.; Hahn et al., 2011; Hülshager, Feinholdt, & Nübold, 2015).

While it is important to prevent the downstream negative effects of workplace incivility, it is also critical to address and prevent the occurrence of workplace incivility. A growing body of research suggests that interventions aimed at reducing workplace incivility and promoting workplace civility can be successful (Hodgins, MacCurtain, Mannix-McNamara, 2014). One such example is the CREW intervention, which promotes positive and respectful interactions in the workplace, focusing on individual behaviors within a group context, while including actions that ensure management commitment (Leiter, Laschinger, Day, & Oore, 2011; Osatuke et al., 2009).

Another way to improve employee and organizational performance is to increase employees' opportunities for recovery. Prior research indicates that improving resistance to and recovery from stress can measurably and positively impact performance, either through an employee's ability to perform despite stress, or simply to recover more quickly and effectively (Bonanno, Papa, Lalande, Westphal, & Coifman, 2004; Glomb, Duffy, Bono & Yang, 2011; Youssef & Luthans, 2007). Positive effects of internet-based recovery from work interventions have recently been identified, with participants reporting reduced insomnia severity and increases in the number of recovery activities per week (Ebert et al., 2015).

Potential Limitations and Future Directions

While the current study offers several contributions to the workplace incivility and recovery from work literatures, it is important to consider these findings in light of potential limitations. Though the current study addresses two sources of workplace incivility – coworker and supervisor – incivility may arise from other sources, such as subordinates, clients, or members of the public (Hershcovis & Barling, 2010). While we identify relatively similar associations between supervisor and coworker incivility and our outcomes of interest in the current study, it is important for future research to consider the ways in which additional sources of incivility may affect employee outcomes such as rumination and sleep.

Common method variance is another concern, as these data were collected from employees at a single point in time, though research suggests common method variance is typically not as high as would be expected (Spector, 2006). Further, significant interaction terms in our results suggest our findings are not due to common method variance (Siemsen, Roth, & Oliveira, 2010). In developing our theory-driven hypotheses based on prior longitudinal empirical evidence, we can increase confidence in the results of the present study. That being

said, future research will want to examine these associations longitudinally, in line with best practices for mediation research (MacKinnon, Cox, & Baraldi, 2012).

While we controlled for several variables in our current analyses that have previously been associated with our key study variables, there are several additional variables that may warrant consideration in future research. For example, individual difference variables such as negative affectivity or emotional stability may play a key role in understanding the spillover of work stress to nonwork experiences such as recovery (e.g., Sonnentag, Arbus, Mahn, & Fritz, 2014). Further, sleep researchers have identified a number of antecedents of insomnia, including physical pain and depression (Ohayon, 2002). While our paper offers a contribution in identifying a predictor of insomnia symptoms, future research should consider how our proposed model may play out in particularly vulnerable employee populations, such as those experiencing chronic pain and depression, who may already be susceptible to experiencing insomnia.

The sample examined in this study includes a relatively large sample of government employees from one particular federal agency. Within this sample, there is a wide range of occupations, including wildland firefighters, business operations, planning, and public affairs, which enhances the generalizability of our findings to different types of work roles. These findings may further generalize to government employees in other federal agencies, given the similar resources and challenges among the federal workforce. Given that the sample was taken from one organization, future research should replicate these findings in different organizational contexts, such as the private sector, or within smaller organizations.

One other concern may be the somewhat low response rate in our study and the potential for possible selection bias. In looking at research examining typical response rates in organizational field research, we found that a response rate of 35% seems to be fairly common.

While some research examining response rates in organizational field research points to higher average response rates (48.3%, with a standard deviation of 22.2%; Baruch & Holtom, 2008), other research finds lower average response rates when e-mail only approaches to participant recruitment are used (20.7%; Kaplowitz, Hadlock, & Levine, 2004). In addition, given that our results are in line with other findings regarding workplace incivility, rumination, recovery from work, and sleep, we are confident that our findings are not significantly impacted by selection bias. Still, future research should aim at replicating our findings in other samples.

Future studies should separate these variables across time, including through the use of experience sampling methodology, in order to fully clarify the directionality of these relationships (e.g., Nicholson & Griffin, 2016). Additionally, researchers should consider the use of ambulatory devices such as wrist actigraphs to objectively measure sleep outcomes (Barnes, 2012; Eatough, Shockley, & Yu, 2016). These devices use accelerometers to measure motion as a proxy for time spent awake, and have been found to be valid indicators of both sleep quality and quantity. While past research indicates that subjective and objective measures of sleep are strongly correlated (Barnes, Schaubroeck, Huth, & Ghumman, 2011), future research should replicate our findings using objective assessments of employee sleep outcomes.

Conclusion

This study examined the indirect effects of workplace incivility on insomnia symptoms via increased negative work rumination and the conditional effects of recovery experiences (psychological detachment and relaxation). We largely found support for our hypotheses: employees with the highest levels of recovery experiences (better able to detach psychologically and relax after work) sleep better, even in the face of workplace incivility. This provides empirical support for the importance of attending to workplace conditions and promoting

positive affective conditions as a means to maintain and improve employee well-being and subsequent performance. Our findings contribute to the understanding of how and why workplace incivility may be associated with nonwork outcomes, as well as the role recovery may play in this process. Our study offers several practical implications, including suggestions for workplace interventions and policies aimed at reducing workplace incivility and increasing employees' ability to recover from work during nonwork time.

References

- Andersson, L. M., & Pearson, C. M. (1999). Tit for tat? The spiraling effect of incivility in the workplace. *The Academy of Management Review*, 24, 452-471. doi:10.2307/259136
- Barber, L. K., & Jenkins, J. S. (2014). Creating technological boundaries to protect bedtime: Examining work-home boundary management, psychological detachment and sleep. *Stress and Health*, 30, 259-264. doi:10.1002/smi.2536
- Barnes, C. M. (2012). Working in our sleep: Sleep and self-regulation in organizations. *Organizational Psychology Review*, 2, 234-257. doi:10.1177/2041386612450181
- Barnes, C. M., Schaubroeck, J. M., Huth, M., & Ghumman, S. (2011). Lack of sleep and unethical behavior. *Organizational Behavior and Human Decision Processes*, 115, 169-180. doi: 10.1016/j.obhdp.2011.01.009
- Baruch, Y., & Holtom, B. C. (2008). Survey response rate levels and trends in organizational research. *Human Relations*, 61, 1139-1160. doi: 10.1177/0018726708094863
- Bayne, A. M. (2015). Relationships between incivility and physical health: The mediating effect of sleep and moderating effects of hostile attribution bias and rumination in a sample of nurses. *Unpublished Master's Thesis*. Retrieved from:
https://etd.ohiolink.edu/!etd.send_file?accession=bgsu1447257217&disposition=inline
- Berset, M., Elfering, A., Lüthy, S., Lüthi, S., & Semmer, N. K. (2011). Work stressors and impaired sleep: Rumination as a mediator. *Stress and Health*, 27, 71-82.
doi:10.1002/smi.1337
- Bonanno, G. A., Papa, A., Lalande, K., Westphal, M., & Coifman, K. (2004) The importance of being flexible: The ability to both enhance and suppress emotional expression predicts

- long-term adjustment. *Psychological Science*, 15, 482-487. doi:10.1111/j.0956-7976.2004.00705.x
- Brosschot, J. F., Pieper, S., & Thayer, J. F. (2005). Expanding stress theory: Prolonged activation and perseverative cognition. *Psychoneuroendocrinology*, 30, 1043-1049. doi:10.1016/j.psyneuen.2005.04.008
- Brosschot, J. F., van Dijk, E., & Thayer, J. F. (2007). Daily worry is related to low heart rate variability during waking and the subsequent nocturnal sleep period. *International Journal of Psychophysiology*, 63, 39-47. doi:10.1016/j.ijpsycho.2006.07.016
- Brosschot, J. F., Verkuil, B., & Thayer, J. F. (2010). Conscious and unconscious perseverative cognition: Is a large part of prolonged physiological activity due to unconscious stress? *Journal of Psychosomatic Research*, 69, 407-416. doi:10.1016/j.jpsychores.2010.02.002
- Budnick, C. J., & Barber, L. K. (2015). Behind sleepy eyes: Implications of sleep loss for organizations and employees. *Translational Issues in Psychological Science*, 1, 89-96. doi:10.1037/tps0000014
- Cortina, L. M., Magley, V. J., Williams, J. H., & Langhout, R. D. (2001). Incivility in the workplace: incidence and impact. *Journal of Occupational Health Psychology*, 6, 64-80. doi:10.1037//1076-8998.6.1.64
- Cropley, Michalianou, G., Pravettoni, G., & Millward, L. (2012). The relation of post work ruminative thinking with eating behavior. *Stress and Health*, 28, 23-30. doi:10.1002/smi.1397
- Cropley, M., & Zijlstra, F. R. H. (2011). Work and rumination. In J. Langan-Fox & C. Cooper (Eds.), *Handbook of Stress in the Occupations* (pp. 487-502). Northampton, MA: Edward Elgar Publishing, Inc.

- Davis, K. D., Gere, J., & Sliwinski, M. J. (2016). Investigating the work-family conflict and health link: Repetitive thought as a mechanism. *Stress & Health*, 1-9.
doi:10.1002/smi.2711
- Demsky, C. A., Ellis, A. M., & Fritz, C. (2014). Shrugging it off: Does psychological detachment from work mediate the relationship between workplace aggression and work-family conflict? *Journal of Occupational Health Psychology*, 19, 195-205.
doi:10.1037/a0035448
- De Lange, A. H., Kompier, M. A. J., Taris, T. W., Geurts, S. A. E., Beckers, D. G. J., Houtman, I. L. D., & Bongers, P. M. (2009). A hard day's night: A longitudinal study on the relationships among job demands and job control, sleep quality, and fatigue. *Journal of Sleep Research*, 18, 374-383. doi:10.1111/j.1365-2869.2009.00735.x
- Eatough, E., Shockley, K., & Yu, P. (2016). A review of ambulatory health data collection methods for employee experience sampling research. *Applied Psychology: An International Review*, 65, 322-354. doi: 10.1111/apps.12068
- Ebert, D. D., Berking, M., Thiart, H., Riper, H., Laferton, J. A. C., Cuijpers, P., & Lehr, D. (2015). Restoring depleted resources: Efficacy and mechanisms of change of an internet-based unguided recovery training for better sleep and psychological detachment from work. *Health Psychology*, 34, 1240-1251. doi:10.1037/hea0000277
- Edwards, J. R. & Rothbard, N. P. (2000). Mechanisms linking work and family: Clarifying the relationship between work and family constructs. *Academy of Management Review*, 25, 178-199. doi:10.5465/AMR.2000.2791609

- Etzion, D., Eden, D., & Lapidot, Y. (1998). Relief from job stressors and burnout: Reserve service as a respite. *Journal of Applied Psychology*, 83, 577–585. doi:10.1037/0021-9010.83.4.577
- Fodor, D. P, Antoni, C. H., Wiedemann, A. U., & Burkert, S. (2014). Healthy eating at different risk levels for job stress: Testing a moderated mediation. *Journal of Occupational Health Psychology*, 19, 259-267. doi: 10.1037/a0036267
- Fritz, C., Ellis, A. M., Demsky, C. A., Lin, B. C., & Guros, F. (2013). Embracing work breaks: Recovering from work stress. *Organizational Dynamics*, 42, 274-280. doi:10.1016/j.orgdyn.2013.07.005
- Frone, M. R. (2015). Relations of negative and positive work experiences to employee alcohol use: Testing the intervening role of negative and positive work rumination. *Journal of Occupational Health Psychology*, 20, 148-160. doi:10.1037/a0038375
- Geurts, S. A. E., & Sonnentag, S. (2006). Recovery as an explanatory mechanism in the relation between acute stress reactions and chronic health impairment. *Scandinavian Journal of Work and Environmental Health*, 32, 482-492. doi:10.5271/sjweh.1053
- Gilin Oore, D., Leblanc, D., Day, A., Leiter, M. P., Laschinger, H. K. S., Price, S. L., & Latimer, M. (2010). When respect deteriorates: Incivility as a moderator of the stressor-strain relationship among hospital workers. *Journal of Nursing Management*, 18, 878-888. doi:10.1111/j.1365-2834.2010.01139.x
- Glomb, T. M. (2002). Workplace anger and aggression: Informing conceptual models with data from specific encounters. *Journal of Occupational Health Psychology*, 7, 20-36. doi:10.1037//1076-8998.7.1.20

- Glomb, T. M., Duffy, M. K., Bono, J. E., & Yang, T. (2011) Mindfulness at work. In A. Joshi, H. Liao, & J. J. Martocchio (Eds.) *Research in Personnel and Human Resources Management, Volume 30* (pp. 115-157). ISSN: 0742-7301/doi:10.1108/S0742-7301(2011)0000030005
- Guastella, A. J., & Moulds, M. L. (2007). The impact of rumination on sleep quality following a stressful life event. *Personality and Individual Differences, 42*, 1151-1162. doi:10.1016/j.paid.2006.04.028
- Hahn, V. C., Binnewies, C., Sonnentag, S., & Mojza, E. J. (2011). Learning how to recovery from job stress: Effects of a recovery training program on recovery, recovery-related self-efficacy, and well-being. *Journal of Occupational Health Psychology, 16*, 202-216. doi:10.1037/a0022169
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Press.
- Hayes, A. F. (2015). An index and test of linear moderated mediation. *Multivariate Behavioral Research, 50*, 1-22. doi:10.1080/00273171.2014.962683
- Hayes, A. F., Montoya, A. K., & Rockwood, N. J. (2017). The analysis of mechanisms and their contingencies: PROCESS versus structural equation modeling. *Australasian Marketing Journal, 25*, 76-81. doi: 10.1016/j.ausmj.2017.02.001
- Hershcovis, M. S. (2011). "Incivility, social undermining, bullying...oh my!": A call to reconcile constructs within workplace aggression research. *Journal of Organizational Behavior, 32*, 499-519. doi:10.1002/job.689

- Hershcovis, M. S., & Barling, J. (2010). Towards a multi-foci approach to workplace aggression: A meta-analytic review of outcomes from different perpetrators. *Journal of Organizational Behavior*, 31, 24-44. doi:10.1002/job.621
- Hershcovis, M. S., Turner, N., Barling, J., Arnold, K. A., Dupré, K. E., Inness, M. ... Sivanathan, N. (2007). Predicting workplace aggression: A meta-analysis. *Journal of Applied Psychology*, 92, 228-238. doi:10.1037/0021-9010.92.1.228
- Hodgins, M., MacCurtain, S., & Mannix-McNamara, P. (2014). Workplace bullying and incivility: A systematic review of intervention. *International Journal of Workplace Health Management*, 7, 54-72. doi:10.1108/IJWHM-08-2013-0030
- Holm, K., Torkelson, E., & Bäckström, M. (2015). Models of workplace incivility: The relationships to instigated incivility and negative outcomes. *BioMed Research International*, 2015, 1-10. doi:org/10.1155/2015/920239
- Hülshager, U. R., Feinholdt, A., Nübold, A. (2015). A low-dose mindfulness intervention and recovery from work: Effects on psychological detachment, sleep quality, and sleep duration. *Journal of Occupational and Organizational Psychology*, 88, 464-489. doi:10.1111/joop.12115
- Hülshager, U. R., Lang, J. W. B., Depenbrock, F., Fehrmann, C., Zijlstra, F. R. H., & Alberts, H. J. E. M. (2014). The power of presence: The role of mindfulness at work for daily levels and change trajectories of psychological detachment and sleep quality. *Journal of Applied Psychology*, 99, 1113-1138. doi:10.1037/a0037702
- Jenkins, C. D., Stanton, B. A., Niemcryk, S. J., & Rose, R. M. (1988). A scale for estimation of sleep problems in clinical research. *Journal of Clinical Epidemiology*, 41, 313-321. doi:10.1016/0895-4356(88)90138-2

- Kaplowitz, M. D., Hadlock, T. D., & Levine, R. (2004). A comparison of web and mail survey response rates. *Public Opinion Quarterly*, 68, 94-101. doi: 10.1093/poq/nfh006
- Kinnunen, U., Mauno, S., & Siltaloppi, M. (2010). Job insecurity, recovery and well-being at work: Recovery experiences as moderators. *Economic and Industrial Democracy*, 31, 179-194. doi:10.1177/0143831X09358366
- Krueger, P. M., & Friedman, E. M. (2009). Sleep duration in the United States: A cross-sectional population-based study. *American Journal of Epidemiology*, 169, 1052-1063. doi:10.1093/aje/kwp023
- Leiter, M. P., Laschinger, K. K. S., Day, A., & Oore, D. G. (2011). The impact of civility interventions on employee social behavior, distress and attitudes. *Journal of Applied Psychology*, 96, 1258-1274. doi:10.1037/a0024442
- Li, A., Shaffer, J., & Bagger, J. (2015). The psychological well-being of disability caregivers: Examining the roles of family strain, family-to-work conflict, and perceived supervisor support. *Journal of Occupational Health Psychology*, 20, 40 – 49. doi: 10.1037/a0037878
- Lim, S., Cortina, L. M., & Magley V. J. (2008). Personal and workgroup incivility: Impact on work and health outcomes. *Journal of Applied Psychology*, 93, 95-107. doi:10.1037/0021-9010.93.1.95
- Litwiller, B., Snyder, L. A., Taylor, W. D., & Steele, J. M. (2017). The relationship between sleep and work: A meta-analysis. *Journal of Applied Psychology*, 102, 682-699. doi:10.1037/apl0000169
- Liu, C., Yang, L.-Q., & Nauta, M. M. (2013). Examining the mediating effect of supervisor conflict on procedural injustice-job strain relations: The function of power distance. *Journal of Occupational Health Psychology*, 18, 64-74. doi: 10.1037/a0030889

- MacKinnon, D. P., Coxé, S., & Baraldi, A. N. (2012). Guidelines for the investigation of mediating variables in business research. *Journal of Business and Psychology*, 27, 1 – 14. doi: 10.1007/s10869-011-9248-z
- Magee, C., Gordon, R., Robinson, L., Reis, S., Caputi, P., & Oades, L. (2015). Distinct workplace bullying experiences and sleep quality: A person-centered approach. *Personality and Individual Differences*, 87, 200-205. doi:10.1016/j.paid.2015.08.004
- Martin, L. L., & Tesser, A. (1996). Some ruminative thoughts. In R. S. Wyer (Ed.), *Ruminative thoughts: Advances in social cognition* (Vol. IX, pp. 1-47). Mahwah, NJ: Erlbaum.
- Meijman, T. F., & Mulder, G. (1998). Psychological aspects of workload. In P. J. D. Drenth & H. Theirry (Eds.), *Handbook of work and organizational psychology* (Vol. 2: Work psychology, pp. 5-33). Hove, England: Psychology Press.
- Moreno-Jiménez, B., Rodríguez-Muñoz, A., Pastor, J. C., Sanz-Vergel, A. I., & Garrosa, E. (2009). The moderating effects of psychological detachment and thoughts of revenge in workplace bullying. *Personality and Individual Differences*, 46, 359-364. doi:10.1016/j.paid.2008.10.031
- Morrow, J., & Nolen-Hoeksema, S. (1990). Effects of response to depression on the remediation of depressive affect. *Journal of Personality and Social Psychology*, 58, 519-527. doi:10.1037/0022-3514.58.3.519
- Nabe-Nielsen, K., Grynderup, M. B., Lange, T., Andersen, J. H., Bonde, J. P., Conway, P. M., ... Hansen, A. M. (2016). The role of poor sleep in the relation between workplace bullying/unwanted sexual attention and long-term sickness absence. *International Archives of Occupational and Environmental Health*, 89, 967-979. doi:10.1007/s00420-016-1136-4

- Nicholson, T. & Griffin, B. (2015). Here today but not gone tomorrow: Incivility affects after-work and next-day recovery. *Journal of Occupational Health Psychology*, 20, 218-225. doi:10.1037/a0038376
- Niedhammer, I., David, S., Degioanni, S., Drummond, A., & Philip, P. (2009). Workplace bullying and sleep disturbances: Findings from a large scale cross-sectional survey in the French working population. *SLEEP, American Academy of Sleep Medicine*, 32, 1211-1219. doi:10.1093/sleep/32.9.1211
- Ohayon, M. M. (2002). Epidemiology of insomnia: What we know and what we still need to learn. *Sleep Medicine Reviews*, 6, 97-111. doi: 10.1053/smr.2002.0186
- Osatuke, K., Mohr, D., Ward, C., Moore, S. C., Dyrenforth, S., & Belton, L. (2009). Civility, Respect, Engagement in the Workforce (CREW): Nationwide organization development intervention at Veterans Health Administration. *Journal Applied Behavioral Science*, 45, 384-410. doi:10.1177/0021886309335067
- Park, Y., Fritz, C., & Jex, S. M. (2015). Daily cyber incivility and distress: The moderating roles of resources at work and home. *Journal of Management*. Available online ahead of print. doi:10.1177/0149206315576796
- Pearson, C. M., Andersson, L. M., & Porath, C. L. (2000). Assessing and attacking workplace incivility. *Organizational Dynamics*, 29, 123-137. doi:10.1016/S0090-2616(00)00019-X
- Porath, C. (2015). The costs of bad behavior: And what leaders can do to manage it. *Organizational Dynamics*, 44, 254-257. doi: 10.1016/j.orgdyn.2015.09.001
- Porath, C. (2016, December). The hidden toll of workplace incivility. *McKinsey Quarterly*. Retrieved from <http://www.mckinsey.com/business-functions/organization/our-insights/the-hidden-toll-of-workplace-incivility>

- Porath, C., MacInnis, D., & Folkes, V. (2010). Witnessing incivility among employees: Effects on consumer anger and negative inferences about companies. *Journal of Consumer Research*, 37, 292-303. doi:<https://doi.org/10.1086/651565>
- Porath, C. & Pearson, C. (2010). The cost of bad behavior. *Organizational Dynamics*, 39, 64-71. doi:10.1016/j.orgdyn.2009.10.006
- Porath, C. & Pearson, C. (2013). The price of incivility. *Harvard Business Review*, 91, 114-121.
- Querstret, D., & Copley, M. (2012). Exploring the relationship between work-related rumination, sleep quality, and work-related fatigue. *Journal of Occupational Health Psychology*, 17, 341. doi:10.1037/a0028552
- Rodríguez-Muñoz, A., Notelaers, G., & Moreno-Jiménez, B. (2011). Workplace bullying and sleep quality: The mediating role of worry and need for recovery. *Behavioral Psychology*, 19, 453-468.
- Schilpzand, P., De Pater, I. E., & Erez, A. (2016). Workplace incivility: A review of the literature and agenda for future research. *Journal of Organizational Behavior*, 37, 57-88. doi:10.1002/job.1976
- Schilpzand, P., Leavitt, K., & Lim, S. (2016). Incivility hates company: Shared incivility attenuates rumination, stress, and psychological withdrawal by reducing self-blame. *Organizational Behavior and Human Decision Processes*, 133, 33-44. doi:10.1016/j.obhdp.2016.02.001
- Shapiro, J. (2013). Workplace incivility at the daily level: The effects of rumination on performance and revenge motives. *Unpublished Master's Thesis*. Retrieved from: http://digitalcommons.uconn.edu/gs_theses/504/

- Siemens, E., Roth, A., & Oliveira, P. (2010). Common method bias in regression models with linear, quadratic, and interaction effects. *Organizational Research Methods, 13*, 456-476. doi:10.1177/1094428109351241
- Siltaloppi, M., Kinnunen, U., & Feldt, T. (2009). Recovery experiences as moderators between psychosocial work characteristics and occupational well-being. *Work and Stress, 23*, 330-348. doi:10.1080/02678370903415572
- Sonnentag, S., Arbeus, H., Mahn, C., & Fritz, C. (2014). Exhaustion and lack of psychological detachment from work during off-job time: Moderator effects of time pressure and leisure experiences. *Journal of Occupational Health Psychology, 19*, 206-216. doi: 10.1037/a0035760
- Sonnentag, S., Binnewies, C., & Mojza, E. J. (2008). "Did you have a nice evening?" A day-level study on recovery experiences, sleep, and affect. *Journal of Applied Psychology, 93*, 674-684. doi:10.1037/0021-9010.93.3.674
- Sonnentag, S., Binnewies, C., & Mojza, E. J. (2010). Staying well and engaged when demands are high: The role of psychological detachment. *Journal of Applied Psychology, 95*, 965-976. doi:10.1037/a0020032
- Sonnentag, S. & Fritz, C. (2007). The Recovery Experience Questionnaire: Development and validation of a measure for assessing recuperation and unwinding from work. *Journal of Occupational Health Psychology, 12*, 204 – 221. doi:10.1037/1076-8998.12.3.204
- Sonnentag, S., Unger, D., & Nägel, I. J. (2013). Workplace conflict and employee well-being: The moderating role of detachment from work during off-job time. *International Journal of Conflict Management, 24*, 166-183. doi:10.1108/10444061311316780

- Sonnentag, S. & Fritz, C. (2015). Recovery from job stress: The stressor-detachment model as an integrative framework. *Journal of Organizational Behavior*, 36, 72-103.
doi:10.1002/job.1924
- Spector, P. E. (2006). Method variance in organizational research: Truth or urban legend. *Organizational Research Methods*, 9, 221-232. doi:10.1177/1094428105284955
- Stone, A. A., Kennedy-Moore, E., & Neale, J. M. (1995). Association between daily coping and end-of-day mood. *Health Psychology*, 14, 341-349. doi:10.1037/0278-6133.14.4.341
- Takaki, J., Taniguchi, T., Fukuoka, E., Fujii, Y., Tsutsumi, A., Nakajima, K., & Hirokawa, K. (2010). Workplace bullying could play important roles in the relationships between job strain and symptoms of depression and sleep disturbance. *Journal of Occupational Health*, 52, 367-374. doi:10.1539/joh.L10081
- Thomsen, D. K., Mehlsen, M. Y., Christensen, S., & Zacharie, R. (2003). Rumination – relationship with negative mood and sleep quality. *Personality and Individual Differences*, 34, 1293-1301. doi:10.1016/S0191-8869(02)00120-4
- Vahle-Hinz, T., Bamberg, E., Dettmers, J., Friedrich, N., & Keller, M. (2014). Effects of work stress on work-related rumination, restful sleep, and nocturnal heart rate variability experienced on workdays and weekends. *Journal of Occupational Health Psychology*, 19, 217-230. doi:10.1037/a0036009
- Van Laethem, M., Beckers, D. G. J., Kompier, M. A. J., Dijksterhuis, A., & Geurts, S. A. E. (2013). Psychosocial work characteristics and sleep quality: A systematic review of longitudinal and intervention research. *Scandinavian Journal of Work and Environmental Health*, 39, 535-549. <http://www.jstor.org/stable/23558364>

- Van Laethem, M., Beckers, D. G. J., Kompier, M. A. J., Kecklund, G., van den Bossche, S. N. J., & Geurts, S. A. E. (2015). Bidirectional relations between work-related stress, sleep quality, and perseverative cognition. *Journal of Psychosomatic Research*, 79, 391-398. doi:10.1016/j.jpsychores.2015.08.011
- Volmer, J., Binnewies, C., Sonnentag, S., & Niessen, C. (2012). Do social conflicts with customers at work encroach upon our private lives? A diary study. *Journal of Occupational Health Psychology*, 17, 304–315. doi:10.1037/a0028454
- Watkins, E. R. (2008). Constructive and unconstructive repetitive thought. *Psychological Bulletin*, 134, 163-206. doi:10.1037/0033-2909.134.2.163
- Welbourne, J. L., & Sariol, A. M. (2017). When does incivility lead to counterproductive work behavior? Roles of job involvement, task interdependence, and gender. *Journal of Occupational Health Psychology*, 22, 194-206. doi:10.1037/ocp0000029
- Wickens, C. D., Hutchins, S. D., Laux, L., & Sebok, A. (2015) The impact of sleep disruption on Complex Cognitive Tasks: A meta-analysis. *Human Factors*, 57, 930–946 doi:10.1177/0018720815571935
- Yamada, D. C. (2000). The phenomenon of “workplace bullying” and the need for status-blind hostile work environment protection. *Georgetown Law Journal*, 88, 475-537.
- Yang, L. -Q., & Caughlin, D. E. (2017). Aggression-preventive supervisor behavior: Implications for workplace climate and employee outcomes. *Journal of Occupational Health Psychology*, 22, 1-18. doi:10.1037/a0040148
- Youssef, C. M., & Luthans, F. (2007). Positive organizational behavior in the workplace: The impact of hope, optimism, and resilience. *Journal of Management*, 35, 774-800. doi:10.1177/0149206307305562

Zoccola, P. M., Dickerson, S. S., & Lam, S. (2009). Rumination predicts longer sleep onset latency after an acute psychosocial stressor. *Psychosomatic Medicine*, 71, 771-775.
doi:10.1097/PSY.0b013e3181ae58e8

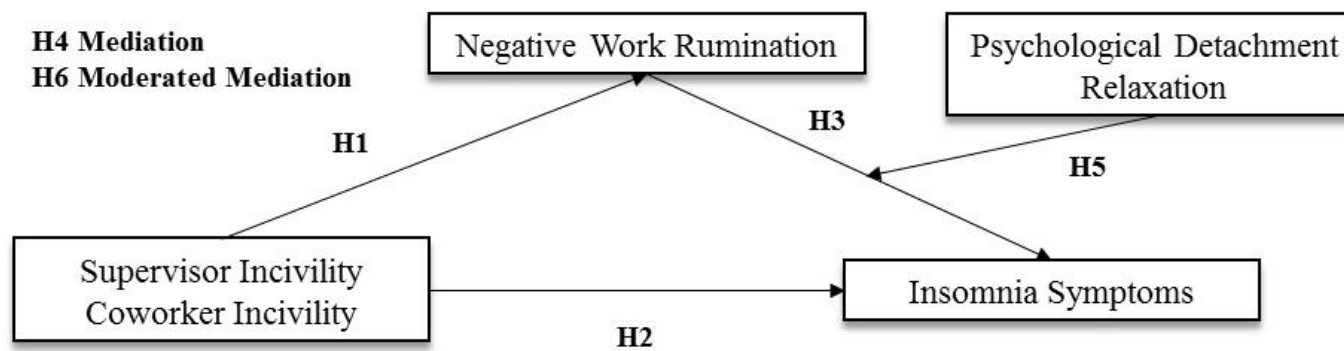


Figure 1. Hypothesized model.

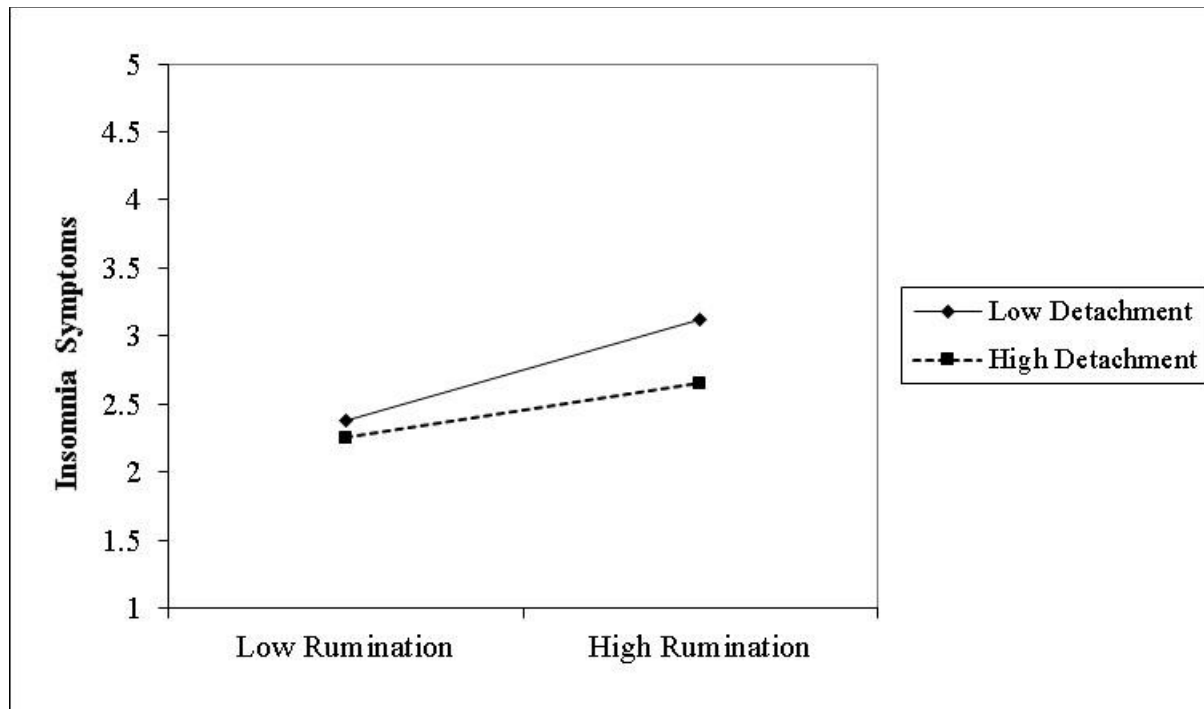


Figure 2. Psychological detachment as a moderator of the relationship between negative work rumination and insomnia symptoms.

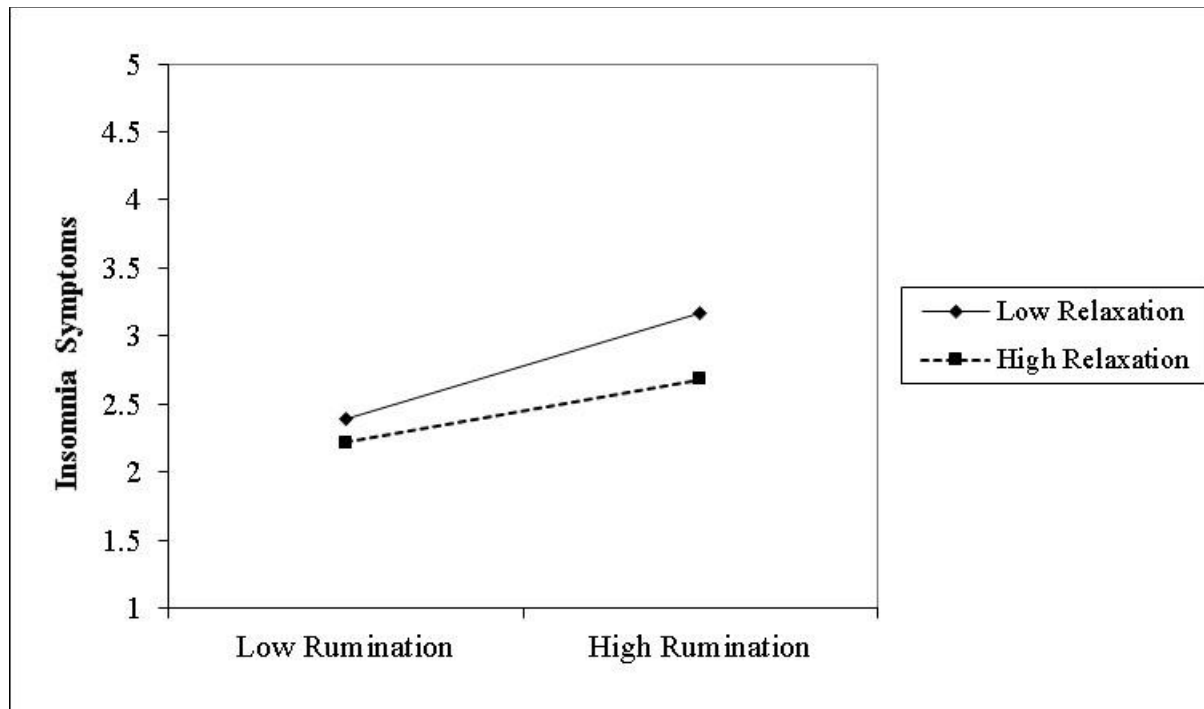


Figure 3. Relaxation as a moderator of the relationship between negative work rumination and insomnia symptoms.

Table 1
Means, Standard Deviations, and Correlations among Study Variables

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1. Children under 18	.56	.99	-								
2. Hours per week	41.77	10.30	.05	-							
3. Alcohol use	3.50	1.74	-.12**	.03	-						
4. Supervisor incivility	1.95	.94	.05	.14**	-.03	(.93)					
5. Coworker incivility	1.85	.83	.04	.10*	.01	.41**	(.93)				
6. Negative work rumination	2.76	1.12	.05	.14**	.08	.41**	.29**	(.96)			
7. Psychological detachment	3.10	.95	-.05	-.13**	-.02	-.18**	-.16**	-.55**	(.86)		
8. Relaxation	3.67	.92	-.14**	-.13**	.05	-.21**	-.21**	-.41**	.59**	(.94)	
9. Insomnia symptoms	2.65	.98	.11*	.01	.00	.15**	.18**	.37**	-.32**	-.31**	(.78)

Note. * $p < .05$ ** $p < .01$ Reliabilities (Cronbach's α) are on the diagonal in parentheses.

Table 2

Moderated Mediation Results for Supervisor Incivility

Insomnia Symptoms									
Psychological Detachment	Conditional indirect effect	<i>SE</i>	<i>Lower CI</i>	<i>Upper CI</i>	Relaxation	Conditional indirect effect	<i>SE</i>	<i>Lower CI</i>	<i>Upper CI</i>
-1SD	.1499	.0288	.0985	.2126	-1SD	.1599	.0287	.1083	.2220
Mean	.1150	.0255	.0699	.1716	Mean	.1284	.0242	.0860	.1807
+1SD	.0802	.0305	.0236	.1436	+1SD	.0969	.0284	.0459	.1590
Index of Moderated Mediation	-.0372	.0162	-.0709	-.0070	Index of Moderated Mediation	-.0353	.0165	-.0692	-.0027

Note: Insomnia symptoms $N = 514$ -516; Bootstrap sample size = 10,000.

Table 3

Moderated Mediation Results for Coworker Incivility

					Insomnia Symptoms				
Psychological Detachment	Conditional indirect effect	<i>SE</i>	<i>Lower CI</i>	<i>Upper CI</i>	Relaxation	Conditional indirect effect	<i>SE</i>	<i>Lower CI</i>	<i>Upper CI</i>
-1SD	.1160	.0260	.0707	.1736	-1SD	.1234	.0259	.0780	.1801
Mean	.0886	.0215	.0511	.1373	Mean	.1002	.0207	.0643	.1461
+1SD	.0613	.0243	.0174	.1152	+1SD	.0769	.0227	.0360	.1256
Index of Moderated Mediation	-.0292	.0139	-.0593	-.0045	Index of Moderated Mediation	-.0260	.0144	-.0563	.0006

Note: Insomnia symptoms $N = 511$ -513; Bootstrap sample size = 10,000.