Sleepy but creative? How affective commitment, knowledge sharing, and organizational forgiveness mitigate the dysfunctional effect of insomnia on creative behaviors

Abstract

Purpose—This study investigates how employees' experience of suffering from insomnia might reduce the likelihood that they perform creative activities, as well as how this negative relationship might be buffered by employees' access to resources at three levels: an individual resource (affective commitment), a relational resource (knowledge sharing with peers), and an organizational resource (climate of organizational forgiveness).

Design/methodology/approach—Quantitative data came from a survey of employees in the banking sector.

Findings—Insomnia reduces creativity, but this effect is weaker when employees feel a strong emotional bond to their organization, openly share knowledge with colleagues, and believe that their organization forgives errors.

Research limitations— The limitations of this research include its relatively narrow scope by focusing on one personal stressor only, its cross-sectional design, its reliance on subjective measures of insomnia and creativity, and its single-industry, single-country design.

Practical implications—The findings indicate different, specific ways in which human resource managers can overcome the challenges associated with sleep-deprived employees who avoid productive work behaviors, including creativity.

Originality/value—This study adds to extant scholarship by specifying how employees' persistent sleep deprivation might steer them away from undertaking creative behaviors, with a particular focus on how several pertinent resources buffer this process.

Keywords—creativity, insomnia, affective commitment, knowledge sharing, organizational forgiveness

Paper type—Research paper

Employees can enhance their organizations' success through their creative behavior, including developing new ideas that might change or improve the organizational status quo (Chen and Kaufmann, 2008; Frederiksen and Knudsen, 2017; Shalley and Gilson, 2004). Yet generating new ideas that disrupt the status quo also is challenging; other organizational members might perceive these ideas as upsetting or as attacks on their personal turf and reputation (Chen et al., 2015; Yuan and Woodman, 2010; Van Dijk and Van Dick, 2009; Zhou and George, 2001). Therefore, firms and their human resource (HR) managers need a better understanding of the conditions in which employees might be more or less prone to perform creative activities that contribute to organizational success, despite the challenges of doing so (Gomes da Costa *et al.*, 2018; Jam *et al.*, 2017; Rich, 2016).

Previous research cites dysfunctional roles of various sources of workplace adversity that thwart employee creativity, such as excessive workloads (Ocker, 2015), perceived organizational politics (Spreitzer *et al.*, 2012), or unclear job descriptions (Coelho *et al.*, 2012). However, less attention has been devoted to how personal challenges might spill over from home to the workplace, with a few exceptions related to how an imbalance between work and family obligations (Aleksic *et al.*, 2017) or marital dissatisfaction (Tang *et al.*, 2017) may turn employees away from creative activities. This study focuses instead on how insomnia—defined as the extent to which people suffer from persistent sleep deprivation (Cole *et al.*, 2011)—might undermine employees' creative efforts in the workplace.

Even if insomnia is informed in part by unfavorable work stressors (Garcia *et al.*, 2018; Greenberg, 2006), this personal challenge is manifest in employees' persistent struggles to fall asleep or maintain their sleep while at home (Kucharczyk *et al.*, 2012). The exhaustion associated with excessive sleep shortages may curtail the personal energy that employees have

available to develop new ideas for organizational improvement (Amabile, 1996; Zhou and George, 2001). Previous research acknowledges insomnia as a fundamental problem that confronts many workers (Barnes *et al.*, 2017; Kucharczyk *et al.*, 2012; Scott and Judge, 2006) but has devoted relatively little attention to the detrimental effects on employees' propensity to contribute to organizational effectiveness through positive work behaviors, like creativity.

Therefore, the current study investigates how persistent sleep deprivation might diminish employees' creative behaviors at work, as well as the conditions in which this challenge is less likely to materialize. Drawing from conservation of resources (COR) theory (Hobfoll, 1989, 2001), its baseline premise is that when employees feel exhausted because they suffer from persistent sleep deprivation, the associated energy resource drainage keeps them from performing discretionary efforts to generate novel ideas for organizational improvement (Quinn *et al.*, 2012; Toker *et al.*, 2015). Yet this negative relationship between insomnia and creative behavior may be less manifest to the extent that employees (1) feel affectively committed to their organization (Meyer *et al.*, 2004), (2) can openly share knowledge with colleagues (De Clercq *et al.*, 2016), and (3) perceive that the organizational climate forgives errors and mistakes (Guchait *et al.*, 2016). The glue that binds these three resources, which function as contingencies in this study's conceptual model, is that they each instill positive energy that employees can draw from to support their efforts to develop new ideas for organizational improvement, *even* when they suffer from resource-draining insomnia (Hobfoll and Shirom, 2000; Quinn *et al.*, 2012).

As its core contribution, this study thus investigates insomnia as an underexplored driver of employees' creative behavior (or lack thereof), with a particular focus on *when* this resource-depleting personal factor might be less likely to exert harmful effects. In so doing, it responds to calls to apply contingency perspectives to explain why some employees are more likely than

others to develop novel ideas for organizational improvement (Aleksic *et al.*, 2017; Zhou and Pan, 2015), with an application to the specific case in which employees have significant difficulty falling or staying asleep at night (Scott and Judge, 2005). The three distinct resources (affective commitment, knowledge sharing, and perceived organizational forgiveness) included as contingency factors collectively provide an extended view of how employees' access to pertinent resources can reduce the risk that they avoid creative behaviors due to their resource-draining sleep problems (Hobfoll, 2001).

Theoretical background and hypotheses

Employees can contribute to organizational effectiveness with their creative behaviors (Amabile, 1996; Chen and Kaufmann, 2008); suggesting novel ideas can improve not just the organizational status quo but also the conditions of its members, manifested in various positive intrinsic and extrinsic outcomes (Kim *et al.*, 2009; Parboteeah *et al.*, 2015). Yet creative behaviors also can create difficulties, especially if other members exhibit skepticism or even aversion to proposed ideas that they perceive as intrusive or threatening to their personal turf (De Clercq *et al.,* 2011; Yuan and Woodman, 2010). Because creative behaviors are inherently challenging, it is important to investigate how a personal resource-draining condition, such as insomnia, might make the situation even worse and prompt employees to avoid creative efforts. Persistent sleep problems among employees are costly and of growing concern for organizations; they increase the likelihood of work accidents and lead to diminished productivity (Garcia *et al.,* 2018; Gunia, 2018). Therefore, this study investigates the *interaction* between employees' insomnia and their access to pertinent resources in an attempt to explain their creative behaviors.

According to the interactionist perspective, creativity results from an interplay of individual and contextual factors (Shalley *et al.,* 2009; Woodman *et al.,* 1993; Zhou and Hoever, 2014). In

particular, this perspective emphasizes a reinforcing dynamic between personal characteristics that increase employees' ability or motivation to generate new ideas on the one hand and their exposure to supportive contextual factors on the other (Amabile, 1988; Tierney *et al.,* 1999). Previous applications of the interactionist approach reveal reinforcing effects of, for example, the strength of employees' growth needs and perceptions of contexts that support creativity (Shalley *et al.*, 2009), organization-based self-esteem and access to resources (Zhang *et al.*, 2018), intrinsic motivation and exposure to high-quality leader–member relationships (Tierney *et al.*, 1999), proactive personalities and work discretion (Chen *et al.*, 2015a), and dispositions toward innovativeness and access to intra-organizational social networks (Chen *et al.*, 2015b), all of which spur creativity. Although the interactionist approach predominantly focuses on the interplay of *positive* employee characteristics with supportive contextual factors to explain creative behaviors, Zhou and Hoever (2014) identify some considerations of how the harmful role of *negative* personal factors might be mitigated by a supportive context. For example, Van Dyne *et al.* (2002) find that the negative effect of strain experienced at home on creativity is mitigated by high-quality leader–member exchanges. Similarly, employees' negative affectivity diminishes their creativity in conditions of low job control, but this relationship becomes positive when job control is high (Binnewies and Wörnlein, 2011).

Notably, research that centers on the benefits of favorable contextual factors for the likelihood that negative personal characteristics do *not* escalate into dampened creativity is relatively rare though, and including this discussion under the general umbrella of the interactionist perspective (Zhou and Hoever, 2002) fails to provide a coherent argument for mechanisms that might underpin these beneficial roles. Conservation of resources (COR) theory addresses this shortcoming. It predicts that when employees' resource reservoirs are drained,

independent of whether that drainage originates within or outside the workplace, they seek to avoid further resources losses by *not* devoting substantial time to discretionary work behaviors that consume energy and possibly disrupt the organizational status quo (Hobfoll, 2001). Similarly, employees who feel drained because of a persistent lack of sleep may not possess the energy needed to overcome the challenge that arises if their ideas encounter skepticism or resistance (Han et al., 2017). This study does not directly assess the particular ways energy drainage manifests but rather relies on previous research that describes several energy-depleting mechanisms, such as those that reflect the limited ability of sleep-deprived employees to perform effectively (e.g., reduced attention span, heightened anxiety levels, poor health; Barnes, 2012; Harrison and Horne, 1999) or their limited motivation, signaled by job dissatisfaction, thwarted hope and optimism, or enhanced perceptions of unfavorable organizational treatment (Gunia, 2018; Pilcher and Huffcutt 1996, Scott and Judge, 2006). All these different mechanisms fall within the general category of energy resource losses, even if they take different shapes.

Importantly, COR theory also postulates that the negative, energy-draining effect of a personal challenge such as insomnia on creative behaviors might be less salient among employees who have access to energy-enhancing resources, whether these resources stem from their own personal characteristics, their relationships with peers, or the wider organizational context (Hobfoll, 2001; Hobfoll and Shirom, 2010). Arguably, many resources could buffer against the escalation of insomnia into diminished creative behaviors; this study specifically considers three of them: affective commitment, knowledge sharing, and organizational forgiveness, a selection justified by several rationales.

First, these three resources complement one another, by capturing positive energy at three distinct levels: Affective commitment reflects the positive energy employees experience through

individual connections with their employing organization (Meyer and Allen, 1991), knowledge sharing relates to positive energy embedded in exchange relationships with *peers* (De Clercq *et al.*, 2016), and organizational forgiveness captures positive energy resulting from employees' sense of how the *organizational* climate treats them (Guchait *et al.*, 2016). Second, the three resources also speak to different reasons employees experience positive energy: Affective commitment relates to their experience of positive *emotions* (Pooja *et al.*, 2016), knowledge sharing pertains to their enhanced *cognitive* abilities (Wang and Noe, 2014), and organizational forgiveness captures supportive *norms* for dealing with errors (Fehr and Gelfand, 2012). Third, previous research cites organizational commitment and knowledge sharing as critical, complementary determinants of positive work outcomes, such as innovation (Curado, 2018) and absorptive capacity (Rafique *et al.*, 2018). Yet these two factors do not capture the inherent risk of failure associated with achieving such positive outcomes, which can be addressed by perceptions of organizational forgiveness or the extent to which employees believe the organization is willing to accept errors in creative processes (Guchait *et al.*, 2016).

This proposed conceptual framework is summarized in Figure 1, in which the baseline negative relationship between employees' insomnia and creative behavior is buffered by the three resources of affective commitment, knowledge sharing, and organizational forgiveness.

[Insert Figure 1 about here]

Insomnia and creative behavior

The baseline hypothesis predicts a negative relationship between employees' insomnia and their creative behavior. Both ability and motivation arguments inform this relationship. First, previous studies indicate that persistent sleep deprivation can lead to reduced cognitive functioning and enhanced errors (Harrison and Horne, 1999), escalate into burnout (Armon *et*

al., 2008; Toker *et al.*, 2015), or undermine employees' abilities find new opportunities for organizational improvement (Schneider *et al.*, 2004). In essence, when employees suffer from insomnia, they come to work with depleted energy resources, such that they have reduced ability to contribute to their organization's success with discretionary efforts such as new idea development (Barnes *et al.*, 2017; Hobfoll, 2001). In addition, new ideas often are disruptive, and other members who feel threatened by them might oppose the employees' creative efforts (Buchanan and Badham, 1999; Yuan and Woodman, 2010). Therefore, the energy-depleting effect of insomnia may inhibit employees' creative behaviors, even if these behaviors would contribute to organizational effectiveness, because they lack the stamina to defend their novel ideas (Jansson-Fröjmark and Lindblom, 2010; Quinn et al., 2012).

Second, insomnia diminishes employees' work motivation (Scott and Judge, 2006; Totterdell *et al.*, 1994), such that they may no longer pursue positive, creative activities from which their organization otherwise could benefit. For example, if employees are deprived of sufficient sleep, they may have less interest in fulfilling their expected job tasks (Kageyama *et al.*, 1998) and experience lower job satisfaction (Barnes *et al.*, 2012), which in turn might decrease their willingness to engage in positive work behaviors. Thus, the negative emotions and frustrations that arise with insomnia may undermine employees' interest in helping their organization by engaging in productive activities such as creativity (Amabile, 1996; Barnes *et al.,* 2017). Moreover, the negative emotions that sleep-deprived employees experience might have a *persistent* harmful effect on their work motivation, because they have difficulty controlling and managing these emotions (Pilcher and Huffcutt, 1996).

Hypothesis 1: There is a negative relationship between employees' insomnia and their creative behavior.

Moderating role of affective commitment

Employees' affective commitment should diminish the likelihood that their insomnia steers them away from creative behaviors. Employees who feel emotionally attached to their organization have a genuine interest in pinpointing and resolving organizational failures, whatever effort it requires, because they feel an intrinsic motivation to do so (De Clercq and Belausteguigoitia, 2007; Ryan and Deci, 2000). They likely allocate some of their personal energy to discretionary work behaviors, such as creativity, despite the challenge of resource-draining sleep deprivation (Hobfoll, 2001). Similarly, this organizational commitment redirects employees' attention away from personal issues and toward work activities (Pooja *et al.*, 2016). Strongly committed employees thus should put less emphasis on the personal challenges that they might experience when they come to work with insufficient sleep and instead feel more motivated to conserve some energy resources to assign to positive work behaviors such as creativity (Hobfoll and Shirom, 2000; Sousa and Coelho, 2011). Finally, affective commitment might reduce the potency with which employees' insomnia curtails their creative behavior, because they may find the challenge of dealing with this personal hardship while still generating ideas for organizational improvement motivating and fulfilling (Meyer *et al.,* 2004).

> **Hypothesis 2:** The negative relationship between employees' insomnia and creative behavior is moderated by their affective commitment, such that the relationship is weaker at higher levels of affective commitment.

Moderating role of knowledge sharing

Knowledge sharing should have a similar buffering effect, such that the extent to which employees regularly communicate with colleagues mitigates the negative relationship between their suffering from insomnia and their engagement in creative behaviors. When employees are severely sleep deprived, their access to relevant knowledge held by colleagues may spur their cognitive abilities to deal with this source of personal adversity (Wang and Noe, 2014), thereby

reducing the likelihood that their sleep shortages keep them from performing creative activities. For example, the advice and feedback they receive from peers can offer critical insights into how to find novel solutions for organizational problems, even if they lack sufficient sleep (Gong *et al.*, 2013; Hobfoll, 2001; Wang and Noe, 2010). Thus, extensive knowledge sharing can help employees control and manage the hardships of sleep deprivation, because they can consult others and learn how to cope with this personal challenge when they come to work (Cabrera and Cabrera, 2005; Scott and Judge, 2006). Similarly, the support that employees experience through extensive communication—including the insight that they are not the only ones dealing with sleep problems and the associated feeling of "being in the same boat" (Nahapiet and Ghoshal, 1998; Wang and Noe, 2014)—may generate positive energy that diminishes the likelihood that resource-draining insomnia translates into lower creativity (Hobfoll and Shirom, 2000).

> **Hypothesis 3:** The negative relationship between employees' insomnia and creative behavior is moderated by their knowledge sharing, such that the relationship is weaker at higher levels of knowledge sharing.

Moderating role of perceived organizational forgiveness

Finally, employees' perceptions that they operate in an organizational climate of forgiveness—guided by organizational norms that people should *not* hold grudges but instead should be willing to forgive mistakes (Guchait *et al.*, 2016)—may reduce the likelihood that their insomnia curtails their creative behaviors. Previous research suggests that beliefs about organizational forgiveness buffer the negative effects of adverse work situations (e.g., organizational downsizing) on productive work outcomes (Cameron and Caza, 2002). In a similar beneficial role, perceived organizational forgiveness should increase the likelihood that employees maintain some creative activities even when they are sleep deprived, because the belief that their organization is willing to accept mistakes encourages employees to perceive their

work environment as safer and more supportive (Fehr and Gelfland, 2012; Guchait *et al.*, 2016). Accordingly, they should be more willing to engage in disruptive, potentially risky behaviors such as creativity, even if they know that the quality of their new ideas may be hampered by their lack of sleep (Harrison and Horne, 1999; Pilcher and Huffcutt, 1996).

> **Hypothesis 4:** The negative relationship between employees' insomnia and creative behavior is moderated by their perceived organizational forgiveness, such that the relationship is weaker at higher levels of such perceptions.

Method

Sample and data collection

The data came from employees working in five organizations that operate in the banking sector in Guinea-Bissau. This focus on a specific industry avoids the risk of unobserved differences and external market forces that might influence whether employees perceive the need to develop new ideas to improve the organizational status quo (Dayan and Di Benedetto, 2011). The financial sector in Guinea-Bissau is marked by high levels of domestic and global competition, and strong pressures on employees encourage them to come up with new ideas that might help employers maintain their competitive standing (Dannon and Lobez, 2014; Léon, 2016; Sucuma, 2015). Therefore, this empirical context is pertinent for investigating how excessive sleep problems might escalate into diminished creative behaviors, as well as how this process may be mitigated by employees' access to relevant resources.

The survey to collect the data relied on a paper-and-pencil version. A pilot survey was pretested among a small group of employees who did not participate in the main data collection; their feedback helped improve the readability of the questions and data quality. The survey questions were prepared in English and translated into Portuguese by a bilingual translator. To ensure the quality of the translation, avoid cultural bias, and identify any discrepancies, this

Portuguese version was back-translated into English by another translator (Brislin *et al.*, 1973), which led to a few minor changes to the final version of the survey, administered in Portuguese.

To avoid social desirability bias, this study adopted well-established procedures. In particular, the cover letters that accompanied the surveys explained the general objective of the study, promised participants complete confidentiality, indicated that their participation was completely voluntary, and emphasized that only aggregate information would be communicated in any reports that resulted from the research. Moreover, the cover letter and surveys explicitly mentioned that there were no correct or incorrect responses and asked respondents to answer the questions as honestly as possible (Spector, 2006). Finally, respondents had the opportunity to withdraw from the study at any point. Although social desirability bias cannot be eliminated completely, these standard practices significantly reduce the associated concerns.

The targeted participants were selected randomly from lists of employees provided by the HR departments of the participating organizations. Of the 200 originally distributed surveys, 127 completed sets were returned, for a response rate of 64%. Among the respondents, 41% were women, and on average, they were 36 years old and had worked for the organization for six years. A correlation analysis indicated no significant relationships between these individual factors and employees' creative behavior. Following Becker's (2005) recommendation for the treatment of irrelevant control variables, they are not included as controls in the regression analysis.

Although this study is primarily quantitative, qualitative *post hoc* interviews with five key informants from the participating organizations provided complementary insights, consistent with evidence of the importance of context in organizational research (Johns, 2001, 2006). The five informants occupied senior management roles in their respective organizations and had

broad perspectives on the challenges associated with spurring employee creativity. They responded to open-ended queries about, for example, the role of and possible bottlenecks to creative behaviors in their organizations, the extent to which persistent sleep problems are a salient issue, and which strategies their organizations use to mitigate negative outcomes.

Measures

The five focal constructs were assessed with items drawn from previous research, on seven-point Likert scales ranging from 1 ("strongly disagree") to 7 ("strongly agree").

Creative behavior. The measure of the extent to which employees engage in creative behavior used a three-item scale that has been confirmed by previous studies (De Clercq *et al.*, 2017; De Clercq and Belausteguigoitia, 2019), which captures the *development* of new ideas for organizational improvement, rather than idea championing or implementation (Janssen, 2001). In particular, employees assessed whether "I often generate original solutions to problems," "I often search out new working methods, techniques, or instruments," and "I often create new ideas for improvement" (Cronbach's alpha = .89). Some research relies on supervisor ratings of employee creativity (e.g., George and Zhou, 2001; Oldham and Cummings, 1996), but the use of self-reported measures of creativity is both common practice (e.g., Kaufman and Baer, 2004; Shalley *et al.*, 2009; Sijboom *et al.*, 2018) and potentially preferable (Hocevar, 1981; Zhou *et al.*, 2008). Others, including supervisors, may have limited insights into the spectrum of creative behaviors that employees perform (Elsbach and Kramer, 2003). Similarly, because the development of new ideas for organizational improvement is intentional and goal directed (Ford, 1996; Shalley, 1991), self-reported measures might be better than their supervisor-reported counterparts because employees are aware of and knowledgeable about their actual engagement in these activities (Lumsden, 1999; Zhou *et al.*, 2008). Park *et al.* (2016) find that subjective measures of creativity

have higher means and lower variances than their objective counterparts but also that these subjective and objective measures correlate positively and significantly. Other studies similarly indicate positive, significant correlations between perceptual and archival measures of innovative work behavior (Scott and Bruce, 1994) or between self-rated measures of creativity and scores on the Barron Welsh Art Scale creativity test (Furnham, 1999) and tests of divergent thinking (Batey and Furnham, 2006; Carson *et al.*, 2005). Thus, self-rated assessments of creativity, despite some limitations, are appropriate, consistent with prior research, and acceptable.

Insomnia. To assess whether employees suffer from persistent sleep deprivation, this study applied a four-item, survey-based scale derived from previous research (Cole *et al.*, 2011): "I have trouble sleeping," "It takes me a long time to fall asleep," "I often wake up in the middle of the night," and "I wake up earlier than I have to" (Cronbach's alpha = .81). Even if sleep deprivation could also be assessed with other measures—such as polysomnography, a process in which people's sleep patterns are monitored overnight by medically trained specialists, or with daily sleep diaries—these intrusive approaches typically inform clinical instead of organizational studies (Bastien *et al.,* 2001; Lacks and Morin, 1992; Mazzotti *et al.,* 2018; Reite *et al.,* 1995). The self-rated measure of insomnia instead is consistent with prior business and organizational research (e.g., Han *et al.,* 2017; Scott and Judge, 2006; Toker *et al.,* 2015).

Affective commitment. The measure of employees' emotional attachment to their employer relied on three items drawn from previous research (Meyer and Allen, 1991). Respondents indicated whether "I am proud to be an employee of my company," "I feel a sense of loyalty to my company," and "Looking back I would choose this company again as my employer" (Cronbach's alpha = .74).

Knowledge sharing. To assess the extent to which employees openly share knowledge

with their peers, a four-item measure (De Clercq *et al.*, 2016) asked them to indicate whether "There is a high level of knowledge sharing between my colleagues and myself," "My colleagues and I regularly communicate with each other," "My colleagues and I provide each other with a lot of feedback," and "There is a lot of two-way communication between my colleagues and myself" (Cronbach's alpha = .90)

Perceived organizational forgiveness. Employees' perceptions that the organizational climate is forgiving came from a three-item scale that assessed whether people in the organization overlook and forgive mistakes (Guchait *et al.*, 2016). Participants indicated if "The people within my organization are forgiving of each other's errors, mistakes, and offenses," "People within my organization do not hold grudges," and "People within my organization are willing to overlook most errors, mistakes, and offenses" (Cronbach's alpha = .79).

Common method bias. Two diagnostic analyses help rule out the presence of common method bias. First, a confirmatory factor analysis compared the fit of a five-factor model against that of a one-factor model in which each item loaded on a single factor. The first model achieved superior fit ($\chi^2(10) = 507.70$, $p < .001$), which provided further evidence that common source bias was not prominent in the data (Lattin et al., 2003). Second, the marker technique, based on confirmatory factor analysis (Williams *et al.*, 2010), estimated and compared three models: a baseline model; the Method-C model, in which the method factor loadings were constrained to have equal values; and the Method-U model, in which the method factor loadings were allowed to differ (De Clercq *et al.,* 2013).[1] The conceptually unrelated market variable was a two-item measure of participants' general experience level, which captures their organizational tenure and age. The two method models did not provide a statistically better fit than the baseline model, as revealed by the lack of significant fit differences between the baseline model ($\chi^2(143) = 213.15$)

[1] More detail about the specifications of these models can be found in Williams *et al.* (2010).

and the Method-C model ($\chi^2(142) = 212.90$; $\Delta\chi^2(1) = .25$, *ns*) or the Method-U model ($\chi^2(126) = 197.00$; $\Delta\chi^2(17) = 16.15$, *ns*). That is, with either equal or unequal method effects, no evidence of common method variance emerged. Finally, the likelihood of common source bias is substantially diminished by theoretical models, such as the one tested herein, that include multiple moderating effects, because research participants cannot easily understand or predict the effects or adapt their responses (Brockner et al., 1997; Simons and Peterson 2000).

Construct validity. In support of the convergent validity of the measurement scales, the factor loadings of each item were strongly significant ($p < .001$) in a five-factor model estimated with confirmatory factor analysis, and the magnitude of the average variance extracted (AVE) estimates were all greater than .50. The constructs also had discriminant validity, because the AVE estimates were greater than the squared correlations between the corresponding pairs of constructs, and significant differences emerged between the chi-square values of the constrained pair models (correlation between two constructs set to equal 1) versus the unconstrained pair models (correlation between constructs set free) for all ten construct pairs ($\Delta\chi^2_{(1)} > .3.84$).

Results

Table 1 reports the bivariate correlations and descriptive statistics, and Table 2 shows the hierarchical regression results. Model 1 included insomnia; Model 2 added the three moderators; and Models 3–5 added the insomnia × affective commitment, insomnia × knowledge sharing, and insomnia × perceived organizational forgiveness interaction terms, respectively. Prior research underscores the appropriateness of adding multiple interaction terms in different equations, because their simultaneous inclusion in a single model might obscure true moderating effects (Covin *et al.*, 2006; Zahra and Hayton, 2008). Each of the two-way interaction terms underwent the well-established approach of mean-centering the product terms. Moreover, the

variance inflation factors in each of the models were below the conservative value of 5.0 (Studenmund, 1992), so multicollinearity was not a concern.

[Insert Tables 1 and 2 about here]

In support of the baseline premise in Hypothesis 1 that energy depletion due to persistent sleep shortages steers employees away from discretionary productive work activities, Model 2 indicates a negative relationship between insomnia and creative behavior ($\beta = -.122$, $p < .05$). The qualitative interviews further indicate that employees' persistent sleep problems often stem from the combination of feeling overburdened by work *and* concerns about inadequate financial compensation—possibly a function of the economic situation in Guinea-Bissau—which can lead to reduced concentration levels and physical hardships (e.g., headaches) when employees try to come up with new ideas at work. Although outside the theoretical realm of this research, the results in Model 2 also reveal direct positive relationships of affective commitment ($\beta = .167$, $p < .05$) and knowledge sharing ($\beta = .153$, $p < .05$) with creative behavior but no such significant relationship for perceived organizational forgiveness ($\beta = .040$, *ns*).

Models 3–5 provide support for the buffering effects of affective commitment ($\beta = .098$, $p < .01$), knowledge sharing ($\beta = .087$, $p < .05$), and perceived organizational forgiveness ($\beta = .082$, $p < .05$) on the negative relationship between insomnia and creative behavior, in support of Hypotheses 2, 3, and 4, respectively. To depict the nature of these interactions graphically, Figure 2, Panels A–C, plots the effects of insomnia on creative behavior at high and low levels of the three moderators, each complemented with a simple slope analysis (Aiken and West, 1991). The simple slope analyses reveal that the relationship between insomnia and creative behavior is negative at low levels of affective commitment ($\beta = -.191$, $p < .01$), knowledge sharing ($\beta = -.196$, $p < .01$), and perceived organizational forgiveness ($\beta = -.227$, $p < .001$) but becomes non-

significant at high levels of these moderators (β = .005, β = .022, β = -.063, respectively, all *ns*).

[Insert Figures 2A–C about here]

The qualitative interviews generated some additional contextual information about these moderating effects. Regarding the role of affective commitment, the informants cited proactive coaching initiatives that provide emotional support to employees and encourage enthusiasm for how their creative activities can enhance the organization's success as effective means to mitigate the disadvantages of sleep deprivation. They also described a beneficial role of knowledge sharing, mentioning that employees who suffer from persistent sleep problems often try to convince colleagues to *share* critical job tasks so they can gain more time for discretionary work activities, such as creativity. Finally, in terms of organizational forgiveness, the interviews revealed that organizational brainstorming sessions—during which employees overburdened by personal or work-related challenges feel comfortable sharing ideas for organizational improvements, *without* the risk of reputation losses or negative career consequences—can be very effective for spurring creativity, even in the face of pertinent sleep challenges.

Although the conceptual focus of this study is the *concurrent* interplay of insomnia on the one hand with affective commitment, knowledge sharing, and organizational forgiveness on the other, a post hoc robustness test also accounts for potential interdependencies among these constructs. For example, employees arguably might suffer less from persistent sleep deprivation to the extent that they can draw on positive work-related energy, as informed by their affective commitment levels, peer interactions, and perceptions of a forgiving organization. Consistent with previous recommendations (De Clercq *et al.,* 2009; Sharma, 1996), estimated path models, corresponding to the models in Table 2, included the covariances among the independent and moderating variables. The results are entirely consistent with those reported in Table 2: The

direct relationship between insomnia and creative behavior, and the moderating roles of affective commitment, knowledge sharing, and organizational forgiveness, remain unchanged, even after accounting for the potential causal interdependencies among these constructs.

Discussion

This study has sought to contribute to extant research by elaborating on how employees' insomnia steers them away from performing creative behaviors, as well as how their access to pertinent resources buffers this process. The lack of research into these issues is surprising, in light of the general acknowledgment that persistent sleep shortages can have severe negative consequences in the workplace (Schneider *et al.*, 2004; Scott and Judge, 2006) and that the harmful spillover of energy-depleting personal challenges into the workplace can be countered by access to relevant resources (De Clercq *et al.*, 2019; Witt and Carlson, 2006). Drawing on COR theory (Hobfoll, 2001), this research focuses on the buffering roles of three distinct resources: affective commitment, knowledge sharing, and perceived organizational forgiveness. The results derived from the statistical analyses generally support the theoretical predictions.

The finding of a direct negative relationship between employees' insomnia and creative behavior is informative for HR scholars, in that it extends previous insights about the dysfunctional role of other sources of adversity in thwarting positive work behaviors, such as role stress and dysfunctional politics at work (Coelho *et al.*, 2012; Spreitzer *et al.*, 2012) or stress that arises at home (Aleksic *et al.*, 2017; Tang *et al.*, 2017). If employees are extremely tired when they come to work, they may be reluctant to perform creative activities, because they lack the stamina to deal with the organizational resistance potentially evoked by their novel ideas (Buchanan and Badham, 1999; Yuan and Woodman, 2010). Persistent sleep problems thus might reduce employees' beliefs that they will be able to defend their novel ideas (Scheider *et al.*,

2004). Moreover, employees who come to work exhausted tend to feel frustrated and unhappy during the execution of their job tasks (Barnes *et al.*, 2012; Scott and Judge, 2006), and these negative emotions in turn may encourage them to avoid positive work activities, such as creativity, that otherwise could contribute to their organization's well-being (Amabile, 1996).

This study also adds to HR research by explicating how the harmful effects of insomnia on creative behavior are contingent on employees' access to relevant resources (Hobfoll and Shirom, 2000), including positive emotions of belonging to their organization (Pooja *et al.*, 2016), insightful knowledge gained from peer relationships (Cabrera and Cabrera, 2002), and beliefs that the organizational climate forgives mistakes (Guchait *et al.,* 2016). The buffering roles of these three contingent factors align with the COR theory argument that the relative importance of personal adversity in curtailing positive work behaviors is subdued in the presence of pertinent resources (Hobfoll, 2001; Hobfoll and Shirom, 2000).

First, employees who feel an emotional bond with their employer derive joy from contributing positively to their organization's well-being (Pooja *et al.*, 2016), so they are less likely to allow the hardships caused by their insomnia to interfere with their efforts to develop productive ideas. The intrinsic motivation and positive emotions that come with a strong affective commitment counter the negative feeling of frustration that tends to mark sleep-deprived employees (Barnes *et al.*, 2017; Totterdell et al., 1994) and mitigate the translation of insomnia into a diminished willingness to contribute to the organization through dedicated creative efforts. Second, extensive knowledge sharing with colleagues is a relational resource that increases employees' cognitive abilities to enhance their organization's success through new ideas, despite the presence of personal hardships (De Clercq *et al.*, 2016). They feel enabled to undertake these discretionary activities and are less likely to let the energy depletion that they

suffer due to their insomnia undermine their creative behaviors when they can draw from useful insights obtained through productive knowledge exchanges (Hobfoll and Shirom, 2000). Third, when employees believe that organizational norms disallow tendencies to hold grudges following mistakes—including those that occur during disruptive activities with uncertain outcomes (Yuan and Woodman, 2010)—they feel protected and are more likely to dare to bring up new ideas, even if their insomnia negatively interferes with the quality of their ideas or their ability to counteract skepticism (Buchanan and Badham, 1999; Harrison and Horne, 1999). That is, to the extent that the organization appears unlikely to embarrass them even if their sleep deprivation leads them to propose less-than-perfect ideas, they are more willing to take the risk of engaging in creative activities (Fehr and Gelfand, 2012).

Taken together, these findings offer HR scholars an extended view of *when* severe sleep problems at home are more or less likely to spill over to the workplace, in the form of reduced creativity levels. Specifically, they contribute to extant HR research by explicating the concurrent roles of insomnia and access to three distinct resources for determining the likelihood of creative behaviors. Notable in this regard, the buffering roles of the three resources capture the *incremental* effect of insomnia on diminished creative behaviors (see the patterns of slopes in Figure 2, Panels A–C). Accordingly, HR managers can leverage this study's insights to establish conditions in which the resource depletion stemming from persistent sleep deprivation is less likely to keep their employees from generating productive novel ideas. Insufficient sleep may undermine creative behaviors to a *lesser extent* if employees also have a strong sense of belonging to their employer, freely exchange relevant information and expertise, and believe that they operate in organizational environments that embrace forgiveness.

Limitations and future research

This study has some limitations that offer opportunities for further research. First, the scope of the tested conceptual framework admittedly is narrow, and many other personal stressors could compromise employees' creative behaviors (for a meta-analysis, see Byron *et al.,* 2010). Focusing on insomnia as a specific stressor reflects the recognition that this source of personal adversity has received relatively little attention in HR management research, despite its high costs and the threat it constitutes to organizations and their employee ranks (Barnes *et al.,* 2017; Garcia *et al.,* 2018). The focus on three contingency factors also constrains the study scope somewhat, yet it reflects a theoretical rationale, in that the three factors span different levels (i.e., individual, peer relationships, and organization) and capture distinct underlying mechanisms (i.e., emotions, cognition, and norms). Future research could consider other buffers of the negative relationship between insomnia and creative behavior, operating at different levels, such as (1) employees' tenacity (Baum and Locke, 2014), (2) trust and goal congruence in their relationships with peers or supervisors (Bouckenooghe and Menguc, 2018), or (3) their perceptions of organizational justice (Colquitt *et al.*, 2001).

Second, the cross-sectional design warrants some caution, in that solutions that arise from new ideas might leave employees less preoccupied with their organizational functioning, so they might sleep better. Continued studies could adopt longitudinal designs to measure the focal constructs at different points in time and assess cross-lagged effects. Further, persistent sleep deprivation likely diminishes employees' ability and motivation to dedicate substantial efforts to new idea development, but further research could measure these mechanisms directly and consider, for example, whether ability- or motivation-based mechanisms are more salient. It also might explicitly measure various factors that underpin these two mechanisms, such as number of errors, job-related anxiety, mental health problems, or thwarted self-esteem.

Third, the reliance on subjective measures of insomnia and creativity also might be an empirical limitation, though various statistical tests affirmed that common source bias was not a concern in this study. Still, continued research could complement and check the robustness of the findings by using (1) objective measures of insomnia, such as polysomnigraphs (Mazzotti *et al.,* 2018), or (2) established creativity tests (Park *et al.,* 2016) or company records of filed new idea disclosures to reflect employees' actual *ability* to be creative and solve problems (Scott and Bruce, 1994). Triangulating self-rated with other-rated creativity scores—even if employees have the most insight into the energy they devote to their own creative activities (Shalley et al., 2009; Zhou et al., 2008)—or self-rated with other-rated assessments of insomnia and the three focal moderators also might provide insights into the antecedents and outcomes of any *discrepancies* between employee and supervisor assessments of these constructs.

Fourth, smaller sample sizes provide more conservative statistical tests of the research hypotheses, because they limit the chances of identifying significant relationships—especially for theoretical frameworks that include multiple interaction effects (Bouckenooghe *et al.,* 2014; Lattin *et al.,* 2003)—but further studies still might benefit from collecting larger samples. The theoretical arguments also were not tied to any specific industry, yet the focus on the banking sector excludes any consideration of possibly relevant industry characteristics, such as the intensity of competition in external markets (Porter, 1996). For example, it would be interesting to unpack potentially opposing mechanisms that might arise from employees' exposure to intensive external competition, in that such stressful conditions might increase the likelihood that they suffer from insomnia (Gunia, 2018) but also motivate employees to *help* their organization by engaging in productive creative behaviors, even despite the resource drainage that they might experience due to sleep problems (Lahiri *et al.,* 2008). Finally, the single-country context might

represent a limitation, yet the theoretical arguments are not country specific, and this study addresses calls for more research on creative behaviors in the understudied African continent (Aminu and Arthur 2017; Antwi *et al.,* 2019). Nonetheless, cross-country studies could assess the relative importance of employees' energy depletion, due to persistent sleep deprivation, for undermining their creative behaviors, as well as the prevalence of different underlying contingencies, across *different* cultural contexts.

Practical implications

This investigation of the joint effects of employees' insomnia and access to selected resources has critical practical relevance for HR management practice. The difficulties of falling asleep or maintaining sleep are important sources of energy depletion for employees, and HR managers should find ways to address this challenge. Yet employees might be reluctant to admit that they come to work fatigued, to avoid excessive scrutiny from superiors (Scott and Judge, 2006). Therefore, HR managers could implement monitoring systems that track employees' potential sleep problems on an ongoing basis, by making this issue part of performance feedback sessions with their supervisor, for example. They also should be *proactive* in pinpointing work-related reasons employees might suffer from persistent sleep deprivation—such as stress due to perceived contract breaches (Garcia *et al.*, 2018) or unfair payment policies (Greenberg, 2006)—and design appropriate solutions. For example, they could establish open forums for employees to share their concerns about work-related causes of sleep deprivation, nominate target persons in the HR department with whom employees can share their concerns confidentially, or formally appoint an ombudsman or ombudswoman to address pertinent employee concerns (Harrison *et al.*, 2013). The creativity challenges that individual employees may experience in the presence of insomnia also could extend to the *firm* level and compromise the organization's learning capacity

and competitive positioning in its external markets (Oltra and Vivas-López, 2013). Therefore, HR professionals need to design systems that quantify whether and how decreases in individual employee productivity, due to persistent sleep shortages, are likely to spill over and hurt the organization's financial performance.

Some of the causes of insomnia are not under the organization's control though, so some employees likely will always come to work without sufficient sleep. The results from the quantitative analyses showed that HR managers interested in promoting creative behaviors, despite the insomnia that their employees suffer, can benefit from honing adequate resources on three levels (Hobfoll and Shirom, 2000): (1) employees' strong sense of belonging to their employer at the individual level, (2) exchanges of valuable knowledge about personal challenges at the relational level, and (3) an organizational climate in which members forgive errors at the organizational level. Without access to these resources, sleep-deprived employees are less able or willing to develop new ideas for organizational improvement. Specific HR initiatives that could stimulate these three resources include (1) creating and sharing a motivating vision about the goals and values of the organization, such that employees sense that they are in the same boat; (2) developing and sustaining an organizational culture in which employees feel comfortable expressing how challenging circumstances, both at work and home, interfere with their sleep quality; and (3) implementing transparent policies that reassure employees that they are allowed to fail when they undertake risky work activities that might not have an immediate return.

These general recommendations were also echoed in the qualitative interviews. In particular, the managerial informants noted that the reasons for persistent sleep problems can be manifold, including feeling overburdened by work and worrying about insufficient pay, which can dampen creativity. In turn, this harmful process may be more easily contained when HR

managers (1) provide emotional support to employees as they deal with challenging situations, (2) develop communication platforms through which employees can share their workloads and other concerns about their personal or work functioning with peers, and (3) organize brainstorming sessions in which employees feel protected and encouraged to suggest novel ideas, without fear that they will backfire or undermine their position in the organization. Ultimately, the quantitative and qualitative findings concur in recommending that organizations concerned about the escalation of insomnia into diminished creative behaviors can benefit from recruitment, training, and evaluation policies based, at least in part, on encouraging employees to build and maintain positive emotions toward their employer, share personal experiences and insights with peers, and not hold grudges against people who make mistakes.

Conclusion

With a conceptual grounding in COR theory, this study has investigated the roles of employees' insomnia and access to selected contingency factors for explaining creative behaviors. The findings indicate that the energy drain due to persistent sleep deprivation undermines employees' propensity to go out of their way to develop new ideas from which their organization could benefit. However, this harmful effect is weaker to the extent that employees can rely on pertinent resources that instill them with positive energy that they can use to overcome the hardships of limited sleep. Such resources play an instrumental, indirect role by preventing persistent sleep deprivation from spilling over to the workplace, in the form of diminished creativity. In turn, this study may serve as a platform for further examinations of how organizations can contain the risk that sleep-related hardships make employees reluctant to perform productive activities at work.

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F**igure 1.** Conceptual Model

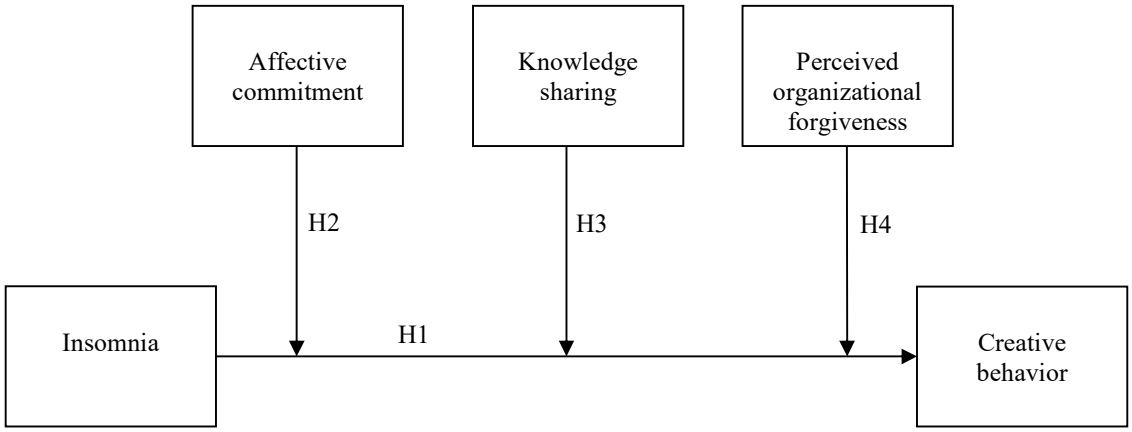
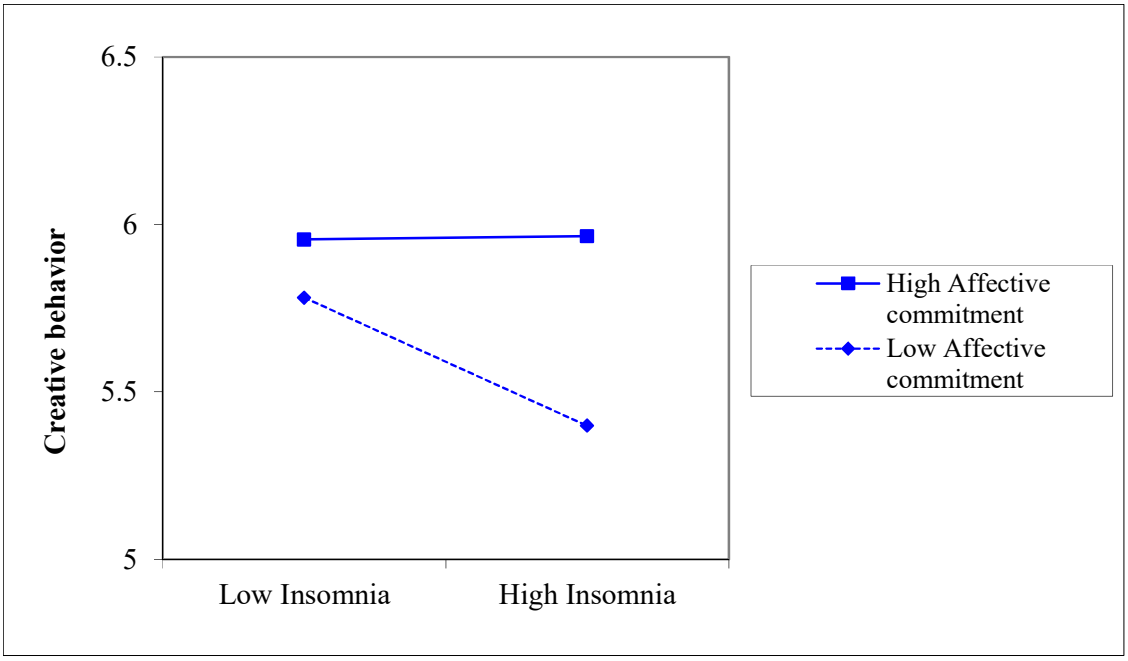
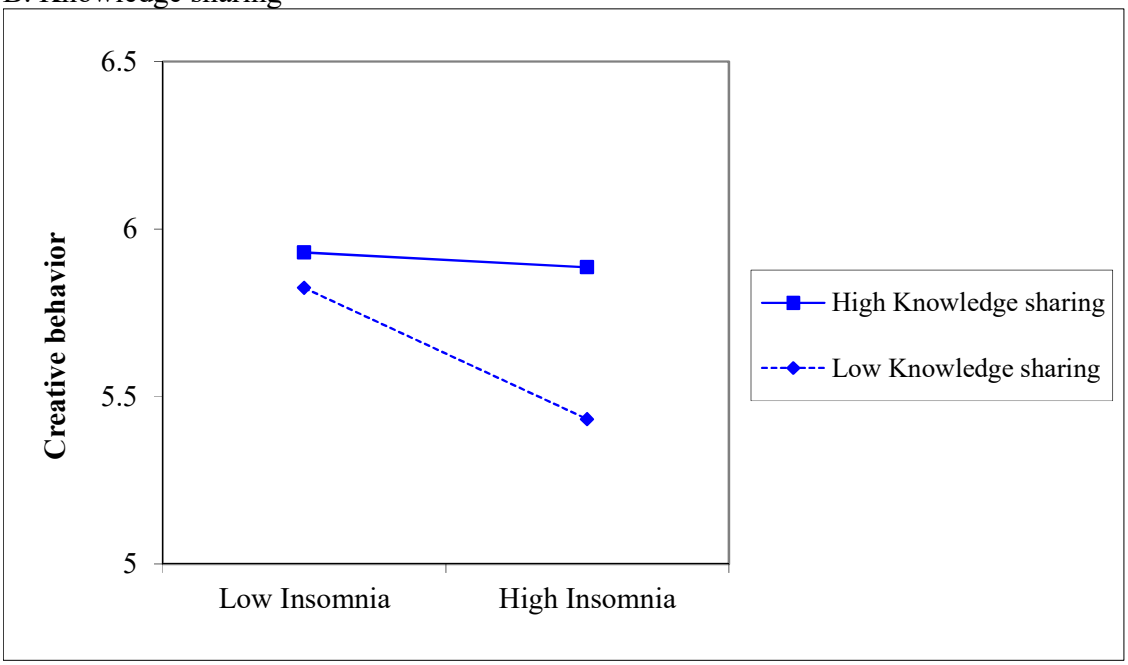


Figure 2. Buffering effects in the relationship between insomnia and creative behavior

A. Affective commitment



B. Knowledge sharing



C. Perceived organizational forgiveness

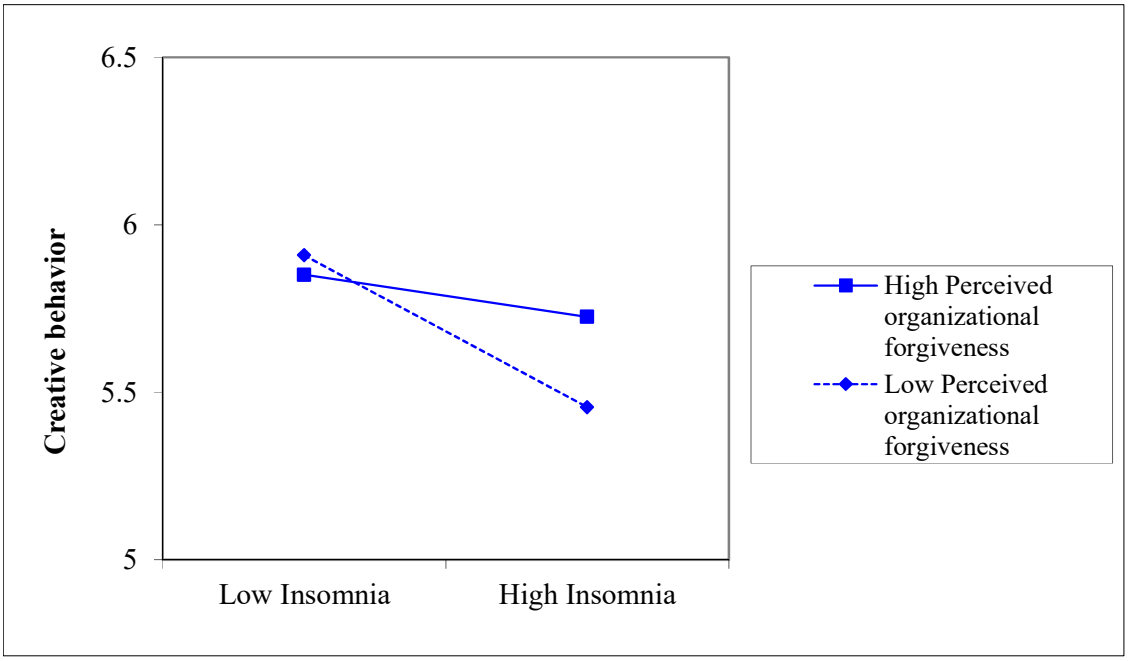

6.5
6
5.5
5
Creative behavior
Low Insomnia
High Insomnia
High Perceived organizational forgiveness
Low Perceived organizational forgiveness

Table 1. Correlations and descriptive statistics

	Mean	SD	1	2	3	4
1. Creative behavior	5.766	1.095				
2. Insomnia	3.292	1.661	-.199*			
3. Affective commitment	5.184	1.336	.284**	-.054		
4. Knowledge sharing	5.224	1.413	.279**	.009	.269**	
5. Perceived organizational forgiveness	3.745	1.495	.162	.120	.330**	.212*

Note: N = 127.
**$p < .01$; *$p < .05$.

Table 2. Regression results (dependent variable: creative behavior)

	Model 1	Model 2	Model 3	Model 4	Model 5
H_1: Insomnia	-.122*	-.115*	-.093$^+$	-.109$^+$	-.145**
Affective commitment		.167*	.185*	.163*	.141$^+$
Knowledge sharing		.153*	.146*	.140*	.168*
Perceived organizational forgiveness		.040	.017	.038	.053
H_2: Insomnia × Affective commitment			.098**		
H_3: Insomnia × Knowledge sharing				.087*	
H_4: Insomnia × Perceived organizational forgiveness					.082*
R^2	.034	.150	.197	.188	.186
R^2 change		.116**	.047**	.038*	.036*

Note: N = 127; unstandardized coefficients (two-tailed *p*-values).
**$p < .01$; *$p < .05$; $^+ p < .10$.