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The Role of Multilevel Synergistic Interplay among Team Mastery Climate, Knowledge Hiding, and Job Characteristics in Stimulating Innovative Work Behavior

Abstract

This study investigates the multilevel interplay among team-level, job-related, and individual characteristics in stimulating employees' innovative work behavior (IWB) based on the theoretical frameworks of achievement goal theory (AGT) and job characteristics theory (JCT). A multilevel two-source study of 240 employees and their 34 direct supervisors in two medium-sized Slovenian companies revealed significant two- and three-way interactions, where a mastery climate, task interdependence, and decision autonomy moderated the relationship between knowledge hiding and IWB. When employees hide knowledge, a team mastery climate only facilitates high levels of IWB if accompanied by either high task interdependence or high decision autonomy. In the absence of one of these job characteristics, knowledge hiding prevents higher levels of IWB even in the case of strong team mastery climate. The results suggest that multiple job design antecedents are necessary to neutralize the negative influence of knowledge hiding on micro-innovation processes within organizations.

Keywords: innovative work behavior, knowledge hiding, team mastery climate, task interdependence, decision autonomy, multilevel approach

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Organizational innovations start with creative thoughts and proactive behaviors at the individual level. Employees who have been recognized as an essential part of the innovation process represent a creative pool with the potential to develop and foster innovation at multiple levels (e.g., Foss *et al.*, 2013) Employees' creative ideas and subsequent implementation efforts together constitute innovative work behavior – IWB; Janssen, 2000; de Jong and den Hartog, 2010.

Previous studies have shown that several aspects of the work environment at differing levels of analysis influence individual innovation at work (West and Farr, 1989). In specific, recent meta-analytic results show how job design (as a component of human resource management, HRM; Huselid, 1995; Noe *et al.*, 1997; Shipton *et al.*, 2016) is a critical individual-level antecedent and a driving force for employee innovativeness (Hammond *et al.*, 2011). Additionally, team-level climate has been identified as a highly relevant contextual issue for creative and innovative behavior (e.g., Anderson and West, 1998; Hulsheger *et al.*, 2009). Finally, employees who share knowledge engage more in creating, promoting, and implementing job-level innovations (Radaelli *et al.*, 2014). Using similar lenses but different foci, Černe *et al.* (2014) found that not only knowledge sharing but also knowledge hiding may influence employee creativity (and in turn innovation) at work.

Knowledge hiding is the intentional attempt to conceal or withhold knowledge requested by others (Connelly *et al.*, 2012). It provides an interesting contingency to employee innovation because it is not simply the opposite of knowledge sharing; it implies an intent to withhold knowledge that someone else has requested. Such behavior may represent a threat to beneficial outcomes (Connelly *et al.*, 2012) – including IWB. However, although general findings on job design and creativity (Oldham and Cummings, 1996), as well as

creativity and knowledge hiding (Černe *et al.*, 2014) exist, we still do not know much about the combined influence of cross-level antecedents on the relationship between knowledge hiding and IWB. Our goal is to integrate HRM (a top-down approach to job design) and micro-innovation research streams (emerging bottom-up innovation processes) to show that work environments can stimulate employees' IWB, even when they hide knowledge.

We build on the two complementary theoretical frameworks of achievement goal theory (AGT: Ames and Archer, 1988; Ames, 1992) and job characteristics theory (JCT: Hackman and Oldham, 1976). AGT makes an important distinction between mastery- and performance-oriented behaviors, which can have different consequences for IWB as a form of achievement-related behavior at work. Mastery-oriented behavior is motivated by self-referential improvement, whereas performance-oriented behavior focuses on performance relative to that of others. As for JCT, job characteristics have proven a robust predictor for a range of employee outcomes (Humphrey *et al.*, 2007), including innovative behaviors (Hammond *et al.*, 2011). JCT offers a rich description of job-related influences on employee behaviors, which interact with other contextual influences (such as situational cues; Humphrey *et al.*, 2007) in predicting behavior of individuals. According to JCT, task interdependence and decision autonomy reflect the embeddedness of employees with their colleagues and with their work tasks respectively, thus representing job attributes aligned with AGT's view on shared perceptions of success and failure at work. While AGT is a 'personal theory' of individual perceptions and preferences, JCT is a framework for understanding person-job fit through job characteristics in combination with a person's critical psychological states. AGT and JCT supplement each other by offering distinct yet related mechanisms of stimulating individuals to innovate.

Accordingly, we are interested in job context (based on AGT and JCT) for stimulating IWB when knowledge hiding is present. We investigate the interplay among *mastery climate* (team members' shared perceptions of the extent to which their team context values employees' efforts, self-development, cooperation, and learning based on AGT; Jones and James, 1979; Ames, 1992); *knowledge hiding* as an individual behavior; and *job characteristics* (objective and manipulative work features based on JCT; Morgeson and Humphrey, 2006) in stimulating employees' IWB. The extant research informs us that knowledge hiding is detrimental for creativity, that mastery climate is favorable for creativity and for overriding the negative effects of knowledge hiding (cf., Černe *et al.*, 2014), and that task interdependence and decision autonomy have both been deemed as beneficial for creativity (e.g., Gilson and Shalley, 2004). However, we do not yet know how these relationships play out with regards to IWB, and even less so on how these conditions interact with each other in predicting it. We intend to contribute to the HRM and micro-innovation literatures by taking a multilevel perspective when examining top-down contextual influences and cross-level interactions in predicting IWB. This approach is both welcomed (e.g., Anderson *et al.*, 2004) and important because it can help researchers accurately identify and evaluate the contingencies involved in the individual (micro-) innovation processes. HRM-related antecedents of IWB, such as job design alternatives, have received little attention in micro-innovation research (see Hernaus, 2016, for an overview). In addition, few existing studies have applied the multilevel approach that enables a more accurate cross-level assessment of contextual influences such as a team-level climate (e.g., Mathisen *et al.*, 2006). Such an approach is required to specify the interactions of team-level factors with both job- and individual-level antecedents in predicting IWB. In addition, by examining IWB as our

dependent variable, we go beyond mere focus on idea generation (creativity), to include also the processes of idea selection, championing and implementation (e.g., de Jong and den Hartog, 2010), which are all accounted for in IWB.

Furthermore, this paper integrates theories that were not previously related—AGT and JCT—which intuitively complement each other by providing design inputs for creating high-performing jobs; AGT by providing situational cues for successful progress (self- vs other-referent), and JCT by providing independent leeway for performing tasks and interacting with colleagues. Thus, AGT's team mastery climate represents the intrapersonal mechanism for development based on situational cues transformed into IWB through two of JCT's mechanisms: task interdependence and decision autonomy, which in turn co-shape climate perceptions. This enables us to answer a theoretically relevant question of when and how interactions of three types of antecedents (team climate, job design, and individual behaviors) lead to varying levels of IWB.

THEORY AND HYPOTHESES DEVELOPMENT

Innovative work behavior – a performance goal

Tapping employees' innovative potential has become a major HR challenge. High-performing organizations promote and value IWB, which is necessary for capitalizing on organizational innovation (Hirst *et al.*, 2009). Accordingly, scholars have emphasized the importance of innovation in the context of HRM and organizational behavior (e.g., Scott and Bruce, 1994; Axtell *et al.*, 2000). While many scholars have assumed that innovative outcomes of

employee behavior are to a certain degree pre-determined by various contextual and personal factors similar to the ones that pertain to only creativity (e.g., Naglieri and Kaufman, 2001), recent studies by Baer (2012) and Škerlavaj *et al.* (2014) have started to explore both creativity and innovation at the individual level. IWB thus represents multidimensional and multistage activities that include both the initiation and the intentional introduction of new problem-solving ideas and solutions, thereby enhancing a product, service, or process (Shipton *et al.*, 2016). In this respect, AGT can help us understand IWB as a performance-related behavior at work, effectively suggesting important criteria of success and failure concerning IWB as commonly perceived within work units.

The latest advances of JCT have also shown that the task and social job contexts substantially influence employee creativity and innovative behavior, either directly or via interacting with individual-difference variables (Anderson *et al.*, 2014). In other words, IWB is clearly an important performance enhancer that, if seen as a job requirement (e.g., Yuan and Woodman, 2010), can also be understood as an achievement goal (in line with AGT). This achievement goal is defined and shaped by the immediate work setting and specific job attributes (according to JCT), and referring to the purposes or reasons for an individual to pursue a particular task (Pintrich, 2000). More specifically, team-work situations might also influence how employees approach, interpret, and engage into IWB (Janssen *et al.*, 2004).

Knowledge hiding – a negative individual-level contingency of IWB

The nature and success of IWB is based on information and knowledge sharing (Amabile, 1997). Knowledge sharing is a well-studied concept within both organizational behavior and

knowledge management literatures that seems to create the conditions for IWB (Radaelli *et al.*, 2014). In this paper, we are interested in knowledge hiding, which emphasizes the intent behind withholding information from co-workers. Knowledge hiding is not merely a lack of knowledge sharing as the latter can occur also when individuals do not possess knowledge or do not recognize an opportunity to share it (Connelly *et al.*, 2012).

Černe *et al.* (2014) showed that knowledge hiding hinders employee creativity via a distrust loop that occurs when colleagues recognize co-workers' knowledge hiding. We expect a similar pattern of relationship also for IWB; knowledge hiding might be equally or even more important to innovation implementation than to idea generation, because implementation efforts also entail issue selling, convincing others, and synthesizing (Baer, 2012). In such cases, employees are less likely to receive the information required to engage in innovative activities, appropriately select among generated ideas, and get sufficient support for their implementation. When individuals hide knowledge, this is likely to engage them in low interpersonal trust that was indicated by recent meta-analytical evidence to be negatively related to individual innovation (Baer *et al.*, 2015). As such, IWB should be hindered by knowledge hiding. We hypothesize:

Hypothesis 1: *Knowledge hiding is negatively related to IWB.*

Two-way interaction – team-level climate as moderator of the relationship between knowledge hiding and IWB

Individuals and teams dealing with innovative ideas increasingly depend upon each other. Even when they do not have to actually work together on a creative idea, team members belong to the same social context, which shapes their behavior (Shalley and Gilson, 2004). However, with notable exceptions (e.g., Černe *et al.*, 2014), there is still little empirical evidence regarding how team-level factors determine either creativity or innovation. Identifying such cross-level influences is critical for understanding group factors that can facilitate or stifle IWB in a complex social system (Shalley and Zhou, 2008).

A team's climate may foster more innovation in part by generating greater exposure and receptivity to new ideas (e.g., West, 2002). Whether individuals innovate at work may depend on the extant criteria of success and failure in the work environment, which AGT conceptualizes as a perceived motivational climate (Ames, 1992). Mastery climate—a dimension of motivational climate that supports effort and cooperation emphasizing learning, mastery and development of skills (Ames, 1992)—was found to promote more adaptive behaviors such as high performance, high levels of work engagement, trying hard, and persistence when facing difficulty (Nerstad *et al.*, 2013), which could be also associated with creativity and innovation.

The evidence suggests that establishment of a positive mastery climate indirectly influences IWB as it helps employees develop positive emotional states such as psychological safety (Baer and Frese, 2003). Employees in a mastery climate feel safer and more confident, which in turn boosts their willingness to behave innovatively (Baer *et al.*, 2008). Furthermore, as knowledge sharing and information exchange enable social interactions, they are likely to be supported in a mastery climate, which may reduce the likelihood that hiding knowledge will impede IWB. When requested for knowledge required to innovate, employees embedded

in a mastery climate will not consider reciprocal knowledge hiding (Černe et al., 2014) as a beneficial option. Thus, recognizing that they are running against the social norms, knowledge hiders might adjust their behavior to fit the team climate, resulting in a less negative impact of knowledge hiding on IWB. Therefore, we hypothesize:

Hypothesis 2: *Team mastery climate moderates the relationship between knowledge hiding and IWB. For employees who perceive high levels of mastery climate in their teams, the relationship between knowledge hiding and IWB is less negative.*

Multiple effects of AGT and JCT – three-way interactions among mastery climate, knowledge hiding, and job characteristics

While team mastery climate and knowledge hidingcan be adjusted over the long term, HR managers need more proximal ways of dealing with knowledge hiding to influence IWB. Job design represents a powerful HR practice for such change as job characteristics are the driving force and a stimulus for IWB (e.g., Oldham and Cummings, 1996). The perceptions of why individuals are pursuing specific achievement tasks are shaped by everyday interaction at work and by how closely they work with each other (Poortvliet and Darnon, 2010). In turn, situational cues gained from the team climate play a role in shaping the outcomes of employee job characteristics (Tierney, 1999). Achievement perceptions can thus importantly interact with job characteristics by determining their significance, manifestation, and outcomes (Nerstad *et al.*, 2013).

Departing from these recommendations, we explore two job-related characteristics that might be implicated in the knowledge hiding-IWB relationship within a stimulating team-level mastery climate: task interdependence and decision autonomy. They support for AGT's focus on the interdependent context of co-creation of situational cues and achievement goals. In addition, these job-related attributes could crucially influence the achievement of goals through social interdependence (which indicates higher levels of achievement are associated with cooperative rather than competitive or individualistic goal structures) or by enriching job-design characteristics (Roseth *et al.*, 2008).

Task interdependence shows the degree to which a job is intertwined with other jobs and/or job incumbents to complete the work. Research reviewed by Bachrach *et al.* (2006) suggested that task interdependence may increase communication, helping, and information-sharing; boost extra-role performance; and raise expectations of help and norms of cooperation. It is a particularly important feature of the implementation phase of IWB, where team design is a predictive job trait (e.g., Axtell *et al.*, 2000). In a mastery climate, a collective atmosphere of justice, trust, and cooperation is established (Ames and Archer, 1988). This leads to more effective social exchanges as co-workers who trust an employee might not perceive his or her knowledge hiding as an act of distrust and would therefore not reciprocate by withholding knowledge and information in return. However, the situation might differ if the work of one employee highly depends on the work of others. Task interdependence triggers two psychological states of experienced responsibility: responsibility for one's personal work and outcomes as well as responsibility for others' work and their personal outcomes, for which one initiates task interdependence (Kiggundu, 1983). In such cases of high task interdependence, co-workers might view knowledge hiding as an action of

betrayal that undermines their collective mission and effort. This is particularly true of teams in high mastery climates (Ommundsen *et al.*, 2003), which leads to a more interdependent co-creation of achievement goals toward innovation.

Consequently, a high task interdependence of employees in teams high in mastery climate might lead to an even more negative relationship between knowledge hiding and IWB, as subsequent reciprocated knowledge hiding of information crucial for creative and innovative behavior may be even more severe than the initial knowledge hiding. It is possible that, in mastery climate's environment, it is recommendable to isolate employees in terms of task interdependence. This would likely prevent reciprocal actions of knowledge hiding among co-workers that could undermine the general progress toward innovation in work teams. In this way, employees would still be able to obtain the information they require to be innovative because their jobs would not require extensive interaction with co-workers, and knowledge hiding would not be necessary. In contrast, a reciprocal logic would dictate knowledge hiding and consequently a lack of the necessary knowledge for IWB. Therefore:

Hypothesis 3a*: A three-way interaction exists among knowledge hiding, team mastery climate, and task interdependence in predicting IWB. Specifically, in the case of high knowledge hiding accompanied by high levels of team mastery climate, IWB will be at highest levels when accompanied by low task interdependence.*

Job control and decision-making authority have been also recognized as important ingredients for creativity (Amabile, 1996) and employee-driven innovation (Hammond *et al.*, 2011). Autonomous jobs provide employees with the resources to experiment and, thus, to be

creative. Such work settings are expected to encourage positive levels of IWB because decision autonomy makes employees feel self-determined and free from external controls or constraints (Deci *et al.*, 1989). However, a multiplicative effect on stimulating IWB is possible if a mastery climate provides additional contextual support. A mastery-oriented individual tends to be more intrinsically motivated (Ames and Archer, 1988) and more likely to exhibit high levels of IWB (Zhou, 1998). To be intrinsically motivated, and hence innovative, an individual needs to work in high task-autonomy conditions and receive positive feedback in an informational style (Zhou, 1998), which is consistent with a mastery climate. Under mastery climate conditions, individuals often tend to care more about doing well, are more involved in the work (Patrick *et al.*, 2011), and are likely to react positively to a high task-autonomy setting. In such cases, employees experience the highest level of competence and self-determination and thus will exhibit higher levels of IWB (Zhou, 1998).

In terms of the relationship between knowledge hiding and IWB, the logic of a potential three-way interaction is similar to the relationship subjected to mastery climate, but even more strengthened as employees are now basically instructed not to share as much information when making decisions (Janz *et al.*, 1997). Therefore, initial knowledge hiding might not result in additional knowledge misbehavior because employees are stimulated to share knowledge by their mastery achievement structures and the environment of trust among team members. Consequently, knowledge hiders are still able to obtain information necessary for their IWB. By contrast, these individuals would not be very innovative in a team characterized by a high-mastery climate, hiding knowledge, and having to depend on co-workers to great extent to make decisions (having low-decision autonomy). In these cases, individuals are expected to interact a lot and share information; co-workers consider

knowledge hiding as a failure to follow work instructions, which may be viewed as a serious offense in a mastery climate environment (Ommundsen *et al.*, 2003). Consequently, employees would be more inclined to reciprocate by hiding knowledge in return. Thus:

Hypothesis 3b*: A three-way interaction exists among knowledge hiding, team mastery climate, and decision autonomy in predicting IWB. Specifically, in the case of high knowledge hiding accompanied by high levels of team mastery climate, IWB will be at highest levels when accompanied by high decision autonomy.*

Insert Figure 1 about here

METHODS

Sample and procedures

Data were collected from 240 employees and their 34 direct supervisors in two medium-sized Slovenian companies. A translation-back-translation procedure was used to translate the questionnaire from English to Slovenian and back to English. The first sampled company is an aluminum manufacturer; its mission is to produce cutting-edge aluminum. It manufactures matrices, evaporators, and castings, but is also becoming increasingly involved in the services of designing power stations and providing advanced laboratory measurements. The second company included in the research does business within the metalworking industry (rolling, broaching, bending, and casting). It deals with modern blacksmithing and is producing innovative products made from raw metal. With almost 100 years of experience, these

companies have evolved from basic ironmongery and today produce metal products using high quality materials and innovative technologies. Therefore, both companies put innovation at the center of their business models.

The sample included 240 non-production workers (i.e., administrative, management, marketing, project work, R&D etc.) from 34 supervisory teams (about 60% of the total number of work teams within examined companies) who were recognized to be more likely to engage in IWB (i.e. members of those teams are encouraged to come up with creative ideas, which are later implemented with the help of the group) than production workers.

On average, seven employees responded per team, while the modal value was four. The number of direct reports per team supervisor who answered ranged from three to 21. We achieved a 55.3% response rate for supervisors' direct reports (in-team response rates ranged from 25% to 100%). Of those individuals who were included in the sample, about 65% were male and about 45% were between 35 and 45 years of age (SD = 7.01). The largest number of respondents (41%) reported having less than seven years of job tenure (SD = 8.43), and had worked less than three years with a particular supervisor (dyad tenure: SD = 5.43).

Measures

Innovative work behavior was measured on a 1 to 7 frequency scale according to 10-item instrument developed by de Jong and den Hartog (2010) – α = .93. It was supervisor-reported and included items that tap into idea generation (creativity), risk-taking, championing, and

idea implementation. A sample item is: "How often does this employee systematically introduce innovative ideas into work practices?"

All other variables were self-reported. Unless otherwise noted, a seven-point Likert-type scale ranging from one ("strongly disagree") to seven ("strongly agree") was used throughout the study.

Knowledge hiding was assessed with the 12-item scale developed by Connelly *et al.* (2012) – α = .89. The scale opens with the following statement: "In a specific episode in which a particular co-worker requested knowledge from you and you declined." It then includes items such as "I agreed to help him/her but never really intended to."

The perceived team-level climate (mastery climate and ***performance climate)*** was measured with the 14-item instrument developed by Nerstad *et al.* (2013) – α = .79 for mastery climate, and α = .84 for performance climate. The scale opens with the following statement: "In my work team," then asks respondents to assess characteristics of both ***mastery climate*** (such as "Each individual's learning and development is emphasized") and performance climate (such as "Rivalry between employees is encouraged"). The mastery and performance climate ratings from subordinates who belonged to the same team were aggregated to the team level by averaging to obtain a single score for each team. In our analyses, ***performance climate*** was used as a control variable; the study of Černe *et al.* (2014) highlighted it as an important contingency in the knowledge hiding-creativity relationship, so it might also play a role in the knowledge hiding-IWB association.

Task interdependence was assessed with a five-item scale developed by Van Der Vegt *et al.* (2000) – α = .68. One sample item was "I depend on my colleagues for the completion

of my work." ***Decision autonomy*** was measured using three items from Hackman and Oldham's (1980) Job Diagnostic Survey – α = .83; one sample item asked "How much authority do you have in determining how work exceptions are to be handled?"

Control variables. We controlled for two types of variables—theory-related and demographic. As the theoretical baseline we apply and test in this paper is grounded on the situated AGT perspective (e.g., Ames, 1992), we controlled for ***dispositional goal orientation*** in all analyses to conduct a more conservative test of whether team-level climate has an impact over and above the dispositional goal orientation of employees. In addition, we controlled for ***perceived supervisor support*** to tap into supervisor-related variance and used four items from Eisenberger *et al.* (1986) – α = .84.

In order to control for demographics we controlled for ***age***, ***gender***, ***education***, ***job tenure***, ***dyad tenure***, and ***team size***.

RESULTS

Table 1 presents the descriptive statistics for all the variables analyzed in the study. We began by observing the factor structure of the focal variables and conducting a confirmatory factor analysis using AMOS 17 software with maximum-likelihood estimation procedures. The expected five-factor solution (knowledge hiding, mastery climate, task interdependence, decision autonomy, and IWB) displayed adequate fit with the data (Chi-square [141] = 434.35, CFI = .959, SRMR = .048). The factor loadings were above the cut-off value of .60 (Hair *et al.*, 2006) so we were further able to examine hypothesized constructs, including IWB

as our single dependent variable. The dataset consisted of two hierarchically nested levels: 240 employees (level 1) nested in 34 teams (level 2), each of which had a single team supervisor. As each supervisor provided the ratings of IWB for multiple employees, this violates the independence assumption. We therefore applied a multilevel analysis using HLM (Hierarchical Linear Modeling) version 7.0 with a restricted maximum likelihood estimation to test our hypotheses. This approach allowed us to model the non-independence in our dependent variable by partitioning its variance into within-supervisor and between-supervisor components.

Insert Table 1 about here

To validate the aggregation of individual-level measures of mastery climate and performance climate on the team level, we calculated the intra-class correlations (ICCs) and the multi-item within-team agreement ($r_{wg(J)}$). For a mastery climate (a slightly skewed shape), the average $r_{wg(6)}$ was .83, ranging from .65 to .99, whereas ICC(1) was .16 and ICC(2) was .45 (F = 1.86, *p = .012*). For a performance climate (also a slightly skewed shape), the average $r_{wg(8)}$ was .84, ranging from .63 to .96 with ICC(1) of .21 and ICC(2) of .56 (F = 2.36, *p = .001*). Both r_{wg} and ICC scores provided support for using the aggregated team climate values.

Table 2 displays the results of all direct and interaction effects predicting IWB. In Model 1, we examined the direct relationships with IWB as well as a two-way interaction between knowledge hiding and mastery climate predicting IWB (controlling for the interaction between knowledge hiding and performance climate). Knowledge hiding was

negatively related to IWB (γ = -.14, *SE* = .08, *p < .05*), thus supporting Hypothesis 1. We also found support for Hypothesis 2, as mastery climate exhibited a significant interaction effect with knowledge hiding in predicting IWB (interaction term = .18, *SE* = .07, *p < .01*). This two-way interaction is shown in Figure 2.

Insert Table 2 about here

Insert Figure 2 about here

In Model 2, we examined a multiple, three-way interaction effect of knowledge hiding, mastery climate, and task interdependence on IWB. Although task interdependence was not significantly related to IWB, the results showed that the three-way interaction is significant (γ = -.34, *SE* = .11, *p < .01*), thus supporting Hypothesis 3a. This interaction is shown in Figure 3; for employees performing low interdependence tasks in teams with high-mastery climates, the relationship between knowledge hiding and IWB is positive (curve 2). Additional t-tests revealed that the slope of curve 2 was significantly different from other slopes (slope 1 and slope 2: t = -4.529, *p < .01*; slope 2 and slope 3: t = 5.897, *p < .01*; slope 2 and slope 4: t = 5.028, *p < .01*).

Insert Figure 3 about here

In Model 3, we examined a three-way interaction effect of knowledge hiding, mastery climate, and decision autonomy on IWB. The initial results showed that decision autonomy was positively and significantly related to IWB (γ = .19, *SE* = .10, *p < .05*), and the multiple

interaction of examined variables was also significant (γ = .32, *SE* = .10, *p* < *.05*), thus supporting Hypothesis 3b. Results shown in Figure 4 indicate that when people with autonomous jobs (high decision autonomy) work in teams with high-mastery climates, the relationship between knowledge hiding and IWB is positive (curve 1). T-tests further revealed that the slope of curve 1 was significantly different from other slopes (slope 1 and slope 2: t = 2.317, *p* < *.05*; slope 1 and slope 3: t = 7.058, *p* < *.01*; slope 1 and slope 4: t = 5.727, *p* < *.01*).

Insert Figure 4 about here

DISCUSSION

In the present study, we set out to investigate combined influences of cross-level contingencies on IWB. In line with our hypotheses, we found significant two- and three-way interactions in which team mastery climate, task interdependence, and decision autonomy moderate the relationship between knowledge hiding and IWB. Specifically, we showed that the influence of high mastery climate within the work team, supplemented with autonomous and/or interdependent formal job tasks might override negative consequences of employee knowledge hiding on IWB in the workplace.

Although mastery climate generally not only fuels IWB but also acts as a buffer to the negative knowledge hiding-IWB relationship, our three-way interaction effects indicated that this is not necessarily always so. We found interesting results regarding the perception of a mastery climate when observing the graphs that show the interaction effects examined (see Figure 3 and Figure 4). Our results indicate that a perceived high-mastery climate

accompanied by *either* low-task interdependence or high-decision autonomy facilitates the highest levels of employees' IWB within a high knowledge-hiding environment. Obviously, the negative consequences of knowledge hiding do not appear to be relevant when employees are assigned to self-contained jobs. In such circumstances, it is advisable to provide individuals with decision rights to independently pursue their job-related goals, because job control as such increases employees' levels of innovativeness (e.g., Anderson *et al.*, 2014).

However, within the conditions of low-mastery climate, a lack of decision autonomy and presence of task dependence, combined with knowledge hiding, might be detrimental to employee innovation. People who do not have the necessary job resources and required social support to creatively handle complex, demanding, and intertwined tasks cannot do much to pursue innovative goals in the workplace. Nevertheless, we found that a low-mastery climate might temper the negative relationship between knowledge hiding and IWB if accompanied by proper job-design characteristics—namely, *either* enriched decision autonomy *or* a high level of task interdependence. By increasing decision autonomy, managers empower individuals to handle problem-solving issues independently but also count on their potential informal collaboration with colleagues. The second intervention is relational: it increases collaboration requirements for co-workers, who are expected to exchange information and synchronize their efforts regardless of whether they have developed a team spirit within the supervisory team.

Additionally, among respondents who self-reported that they do not hide knowledge and perceived their jobs as characterized by *either* high-decision autonomy *or* low-task interdependence, those who work within teams characterized by the low-mastery climates

were more innovative. While somewhat surprising, these results actually follow the job design logic that jobs should be designed according to the nature of work (e.g., Hackman and Oldham, 1980). If some jobs are independent and do not require teamwork, it is better to provide job incumbents with more autonomy. On the other hand, as knowledge hiding among co-workers increases, changes in their IWB are positive only when they have high-decision autonomy or low-task interdependence within a high-mastery climate environment. In other words, employees' misbehavior affects their innovativeness, but a strong mastery climate at the team level, accompanied by autonomous and relatively self-contained tasks, can neutralize and even reverse it.

Theoretical contributions

The main contribution of our study to research on HRM and micro-innovation is related to conceptually linking and empirically investigating two theoretical frameworks: AGT and JCT. We related and bridged these previously unlinked theories to uncover synergistic workplace features related to team-level mastery climate, job-design characteristics, and individual characteristics conducive to IWB. AGT and JCT intuitively complement each other by providing the logic behind designing highly innovative jobs; AGT by providing situational cues that enable a more accurate interpretation of specific job characteristics, and JCT by offering basic foundations for conducting tasks and interacting with colleagues, which in turn co-shape climate perceptions (Eby *et al.*, 2000). Thereby, this study contributes to the previous research that examined *either* individual characteristics and job attributes *or* contextual variables to stimulate IWB.

The present study is also in sync with the insights of Connelly *et al.* (2012) and Černe *et al.* (2014) on creativity as the outcome variable, who clearly indicated that knowledge hiding and related outcomes may be dependent on the frequency and quality of social interactions among employees. Thus, following their work and the principles of AGT and JCT, we contributed to the broader domain of HRM literature by examining knowledge hiding and its relationship with IWB as a function of both motivational job characteristics and the social-interactions' climate. Starting from AGT, we tested whether perceptions of why individuals pursue specific achievement tasks are shaped by their personal/individual characteristics (knowledge hiding), and to what extent this relationship is defined by the team-level context (mastery climate). Our respondents in general seemed to be more innovative when they felt that they worked within an environment that valued learning and mastery, and where their work efforts were appreciated. We applied AGT because it is helpful in predicting performance-related behaviors at work by effectively suggesting commonly perceived criteria of success and failure within a supervisory team. We have also provided additional insights by empirically showing that such effects are contingent upon the nature of job characteristics.

Our research demonstrated three-way interaction effects in which employees who hide knowledge in teams high in mastery climates exhibit the highest levels of IWB when their tasks do not require them to frequently collaborate with others. This boundary condition results in not perceiving their behavior as fundamentally contrary to the expected achievement behavior expressed in mastery climates, which would be otherwise viewed as betrayal (Ommundsen *et al.*, 2003). Accordingly, low-task interdependence is suitable in an attempt to mitigate the negative effect of individual characteristics (knowledge hiding) on IWB when trying to influence this relationship with achievement in a mastery climate.

Similar conclusions can be found when examining the role of decision autonomy. The results of all measurement models demonstrate that decision autonomy by itself is positively related to better IWB results, and that it is best to provide decision autonomy to employees who hide knowledge in teams with high-mastery climates. This enables them to perform and achieve the tasks by themselves, and thus avoid the reciprocal distrust loop with others (cf., Černe *et al.*, 2014) and its detrimental influence on their own IWB. Therefore, taken together, our results provide a more nuanced view on IWB than purely mainstream findings advocating collaboration, co-creation, and interdependence as absolutely essential for IWB. Instead, knowledge hiders working within high-mastery climates can be given rather autonomous jobs and still be valuable sources of innovation. Our study thus provides a synergistic view of contextual influences, boundary conditions, and, especially, interactions among team-level, job-related, and individual characteristics, that are salient to IWB. .

An important contribution of this study to the micro-innovation literature is also related to the application of multilevel theory. IWB is a complex phenomenon, considerably shaped by contextual social influences at higher levels (Agars *et al.*, 2008), where social influences may differ by level. This is why it is crucial to study relations, dependencies, and interactions across different levels of analysis. A multilevel perspective allowed us to explore the specific contexts and boundary conditions in which micro-innovation management achieves best results. We clearly showed that something viewed as innovative in one setting (such as climate environment or job design arrangement) might be seen as disruptive to another (e.g., Agars *et al.*, 2008). Thus, the present research further emphasized a need to apply multiple, additive theoretical lenses (like AGT & JCT) for getting more complete insights about the occurrence and consequences of behavioral contrast within the work environment.

Practical implications

Managing people to promote innovation is essential if managers are to release the full creative potential of our work organizations (Shipton *et al.*, 2005). Therefore, the practical implications of our study speak to the role of organizations, and specifically HR managers, in creating a stimulating, knowledgeable, and innovative work environment. We found that taking a partial approach—which would independently stimulate (a) knowledge sharing, (b) appropriate work team climate, or (c) flexible job design for innovation—is not enough. Instead, HR managers should consider the work environment as a complex and holistic entity that consists of contextual, job-related, and individual characteristics that not only directly affect IWB but also have synergistic effects that can sometimes be difficult to predict and may have unexpected consequences.

Our study indicated that HR managers and immediate supervisors have the power to mitigate the negative effects of knowledge hiding on IWB by shaping the innovation climate through supportive actions and attitudes to innovation (cf. McGuirk *et al.*, 2015), as well by inducing particular motivational-climate conditions at work. Our findings support the view that emphasizes a mastery climate as a suitable work environment for stimulating innovation when faced with knowledge hiding. The facilitation of a mastery climate can be accomplished by HRM, reward system and leadership initiatives (Ames, 1992).

These efforts also need to be accompanied by appropriate job-design initiatives that provide the employees who unfortunately do hide knowledge within high-mastery conditions with *either* high levels of decision autonomy *or* low levels of task interdependence. In this

way, the negative effects of knowledge hiding on IWB can be mitigated by, simply put, "isolating" those employees who do not respond favorably (that is, fail to curtail their knowledge hiding) to mastery climate conditions. However, employees assigned to autonomous jobs with rather low requirement to collaborate with others on daily tasks can still be valuable to an organization's innovative efforts, despite their non-cooperative attitudes.

Limitations and future research suggestions

The first limitation of our study is related to the research design; although the data were gathered from two sources (employees and supervisors) which reduced the potential of common method bias, the design was still cross-sectional. In order to infer causality in the tested relationships, additional experimental studies or longitudinal field investigations are warranted.

The second set of limitations is related to testing additional omitted variables, which could prove to act as salient boundary conditions or explanatory mechanisms. For instance, job autonomy is a multifaceted property of a job/role that includes work scheduling and work-methods autonomy in addition to decision-making autonomy (e.g., Morgeson and Humphrey, 2006). These alternative and mostly understudied facets of job characteristics can play somewhat distinctive roles in boosting or constraining employee creativity and innovation. Similarly, both supervisor and co-worker support should be addressed more carefully, because managers and other employees might provide inconsistent support toward idea generation and idea implementation (e.g., Klein and Sorra, 1996).

We should also be aware of the limits of using perceptual and self-reported measures. Nevertheless, the approach taken in the study is acceptable as there is a strong evidence that employees' job self-ratings are congruent with objective job features (e.g., Hornung *et al.*, 2010). Furthermore, knowledge hiding must be, by definition, self-reported, because it involves ambiguous and socially undesirable behaviors that are not always visible and therefore not easily captured objectively (e.g., Connelly and Zweig, 2015).

Finally, our sampling strategy focused on studying innovative practices only within two mid-sized manufacturing firms in a single country, which limits the generalizability of the findings to a certain extent. Future research should increase both the sample size and scope, and service organizations should be included as well to address the heterogeneity among industries related to innovative activities. Despite of aforementioned potential drawbacks of the research conducted, we believe that presented findings revealed some new alternatives to stimulate IWBs in contemporary organizations.

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Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Innovative work behavior	5.34	1.06	(.93)													
2 Knowledge hiding	1.94	.85	-.18*	(.89)												
3 Mastery goal orientation	6.13	.91	.34**	-.12	(.83)											
4 Performance goal orientation	5.24	1.21	.26**	.02	.31**	(.74)										
5 Age	44.34	7.01	.04	.10	-.11	-.00	-									
6 Gender	1.65	.38	.09	.05	.09	.05	-.07	-								
7 Education	2.45	.71	.06	.05	.04	.02	-.06	-.15*	-							
8 Job tenure	10.67	8.43	-.08	-.07	-.09	-.07	.40**	-.09	-.03	-						
9 Dyad tenure	5.21	5.43	.02	-.08	.03	.06	.08	-.08	-.01	.49**	-					
10 Team size	7.06	3.12	.05	-.00	.06	-.03	-.17	-.14	.05	.09	.09	-				
11 Task interdependence	4.75	.98	-.05	.10	.08	-.02	-.09	.04	-.08	.02	-.07	-.09	(.68)			

Table 1

Means, standard deviations, and correlations

a, b, c

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12	Decision autonomy	4.90	1.54	.13	-.09	.35**	.20	.12	.25**	.12	.04	.20	.08	-.01	(.89)	
13	Mastery climate	4.56	.89	.23**	.04	.22**	.26**	.16*	.14	.03	.12	.22**	-.01	.13*	.13*	(.79)
14	Performance climate	3.74	.92	.08	-.03	.25**	.28**	.06	.07	-.09	.08	.13	-.06	-.20*	.02	-.03	(.84)

[a] $n = 240$
[b] Coefficient alphas are on the diagonal in parentheses.
[c] For gender, 1 = "female"; 2 = "male"; * p < .05, ** p < .01

Table 2

Multilevel results for innovative work behavior as the dependent variable [a, b]

	Model 1	Model 2	Model 3
Intercept	5.44[**] (.06)	5.43[***] (.06)	5.43[***] (.06)
Control variables			
Age	-.01 (.01)	-.00 (.01)	-.00 (.01)
Gender	-.04 (.04)	-.10 (.06)	-.10 (.06)
Education	.03 (.04)	.01 (.05)	.01 (.05)
Job tenure	-.00 (.01)	-.01 (.01)	-.01 (.01)
Mastery goal orientation	.05 (.05)	.03 (.05)	.05 (.05)
Performance goal orientation	-.01 (.02)	-.00 (.03)	-.01 (.02)
Perceived supervisor support	.07 (.02)	.05 (.02)	.07 (.01)
Dyad tenure	.00 (.01)	.03 (.03)	.03 (.03)
Level 1			
Knowledge hiding	-.14[*] (.08)	-.24[**] (.09)	-.21[*] (.09)
Task interdependence	.08 (.03)	.05 (.05)	.09 (.06)
Decision autonomy	.19[*] (.10)	.27[*] (.10)	.29[*] (.11)
Level 2			
Team size	.10 (.03)	.08 (.03)	.08 (.03)
Mastery climate	.06 (.10)	.04 (.07)	.06 (.08)
Performance climate	-.09 (.05)	-.05 (.06)	-.09 (.05)
Interaction effects			
Knowledge hiding × Mastery climate	.18[**] (.07)	.26[**] (.07)	.26[**] (.07)
Knowledge hiding × Performance climate	.07 (.06)	.05 (.05)	.07 (.06)
Knowledge hiding × Task interdependence		-.26[*] (.12)	
Knowledge hiding × Decision autonomy			.06 (.03)
Knowledge hiding × Mastery climate × Task interdependence		-.34[**] (.11)	
Knowledge hiding × Mastery climate × Decision autonomy			.32[**] (.10)
Pseudo R^2	.40	.43	.42
Deviance	526.27	524.03	522.14
n (Level 1)	34	34	34
n (Level 2)	240	240	240

[a] The entries are the estimates of the fixed effects with robust standard errors.
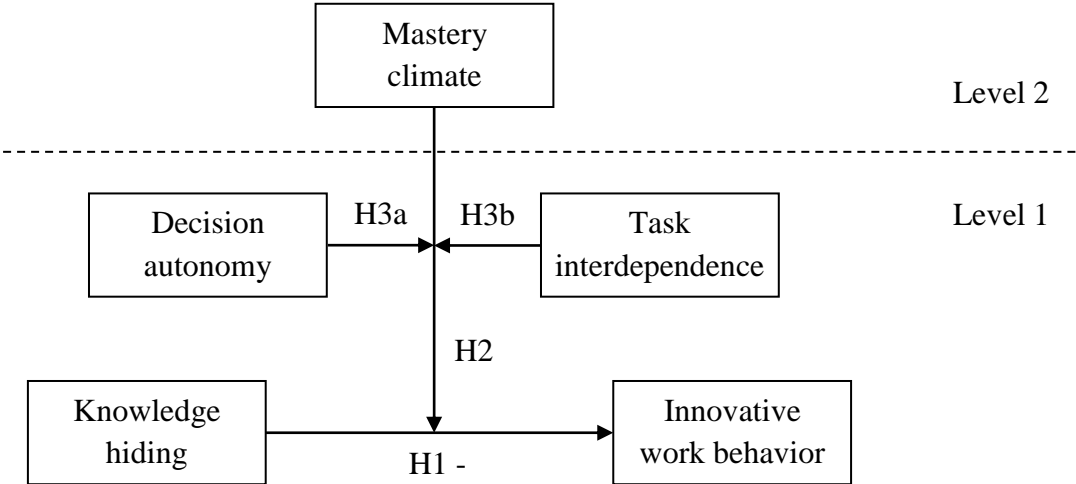
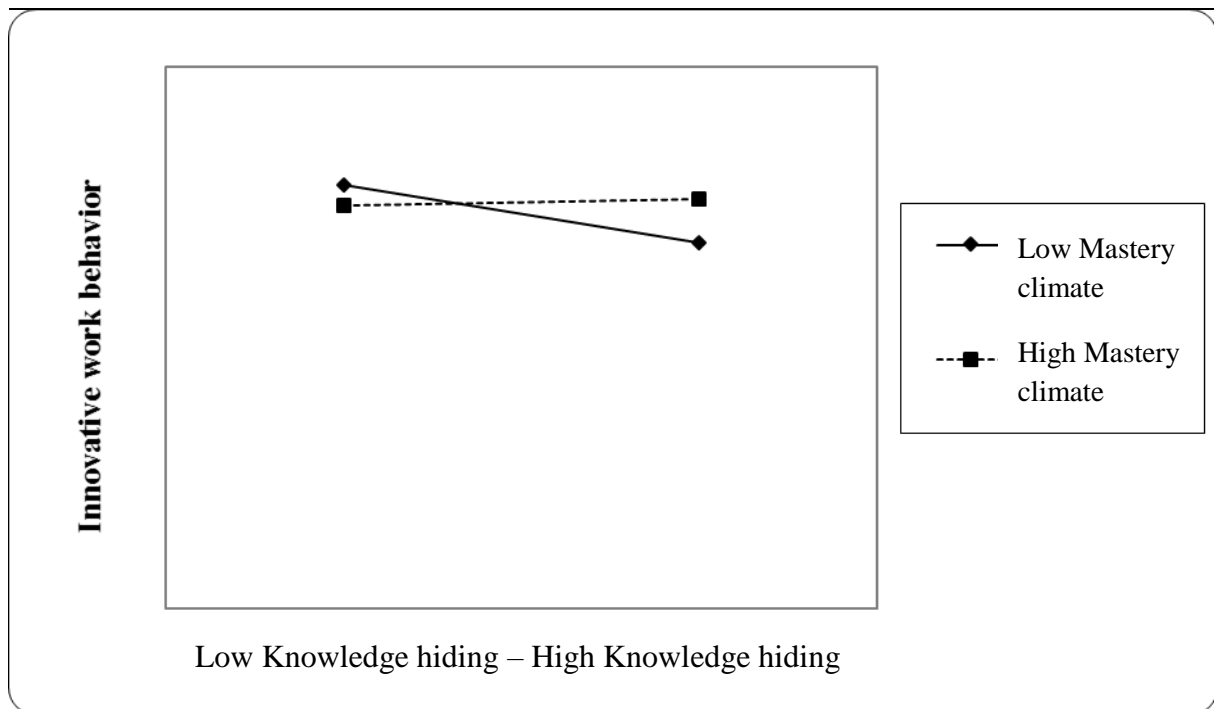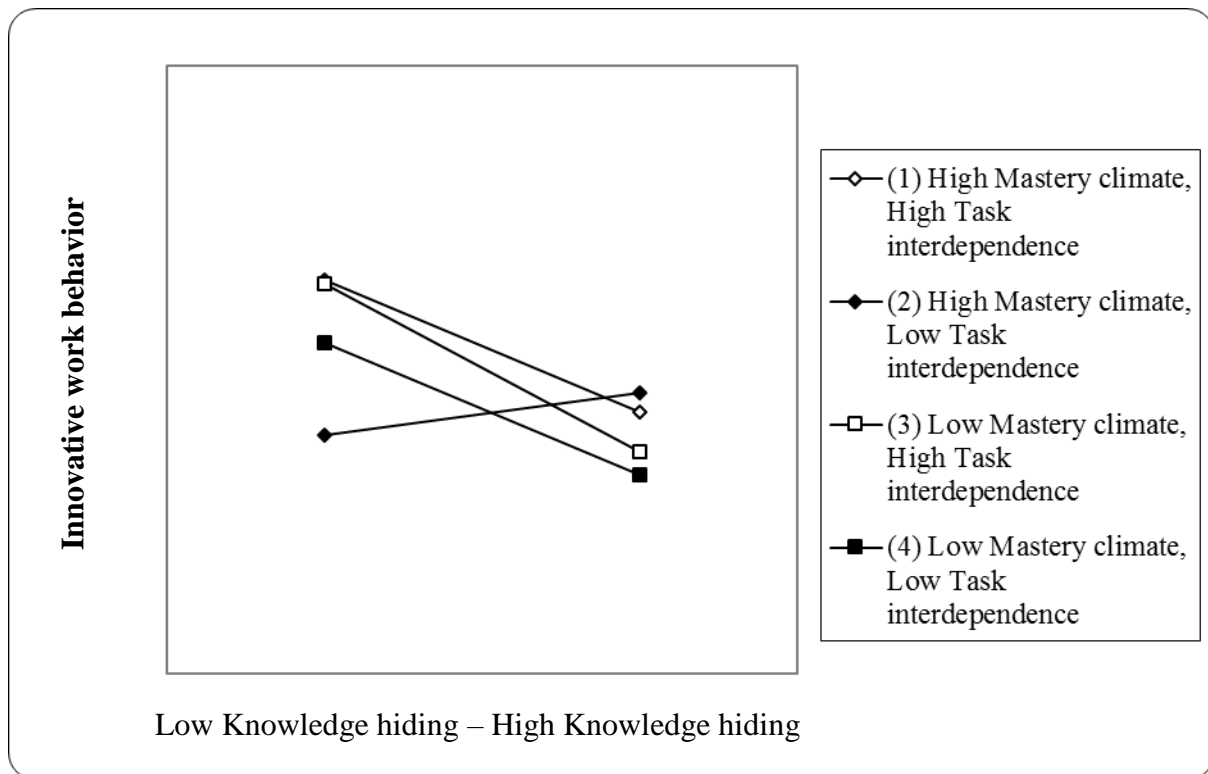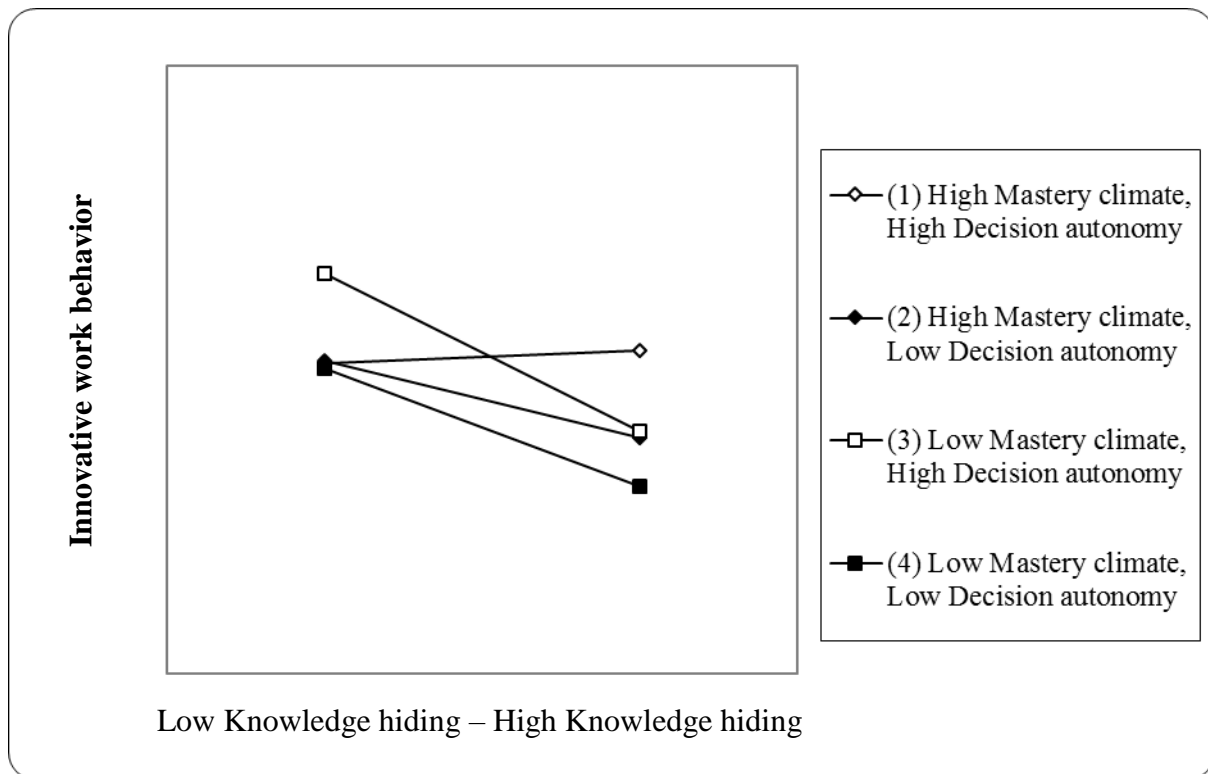[b] ** $p < .01$, * $p < .05$.

Figure 1. Conceptual model with hypotheses

Figure 2. Two-way interaction effects of knowledge hiding and mastery climate on innovative work behavior

Figure 3. Three-way interaction effects of knowledge hiding, mastery climate, and task interdependence on innovative work behavior

Figure 4. Three-way interaction effects of knowledge hiding, mastery climate, and decision autonomy on innovative work behavior