Promoting Employee Entrepreneurial Attitudes: An Investigation of Chinese State-owned Enterprises

ABSTRACT

Drawing from social information processing theory, we explain the relationship among perceived investment in employee development (PIED), psychological climate, and employee entrepreneurial attitudes (EEA). We test our hypotheses by conducting two survey studies of two different Chinese state-owned enterprises (N = 157; N = 112). The results indicate that climates for autonomy and innovation mediate the relationship between PIED and EEA. Furthermore, we differentiate between two types of supervisor behaviour for encouraging creativity in the workplace: promoting collaboration and intellectual stimulation. We find that promoting collaboration enhances the effects of PIED on the climate for autonomy, while intellectual stimulation amplifies the effects of PIED on the climate for innovation. Our research not only extends the current academic literature by investigating the processes (*how*) and contingencies (*when*) whereby PIED affects EEA, but also reveals factors for promoting corporate entrepreneurship in the context of Chinese SOEs. Our findings also offer critical insights for managers by suggesting that they can use human resource management practices and supervision tactics to create a working environment that allows corporate entrepreneurship to flourish.

Keywords: Corporate Entrepreneurship; Climate; Human Resource Management; Intellectual Stimulation; Collaboration; Social Information Processing

Introduction

Corporate entrepreneurship, a collection of firm-level activities that seeks continuously to identify and exploit new business opportunities, seems to be a key factor in contributing to firms' long-term success (Turner & Pennington, 2015; Zahra, 2015). Prior research has suggested that individual employees' engagement in these firm-level activities is the building block for corporate entrepreneurship (Finkle, 2012; Kuratko, Hornsby, & Hayton, 2015). In this research, we refer to individual employees' attitudes that drive their engagement in entrepreneurial acts as 'employee entrepreneurial attitudes' (EEA).

A growing body of literature has emerged on the impact of human resource management (HRM) practices on corporate entrepreneurship. One stream of literature on this research topic explores the influence of an HRM practices-induced work environment on EEA (e.g. Hayton, 2005; Zhang & Jia, 2010). The theme of this literature stream highlights that individual employees' perceptions about firms' HRM practices influence their interpretation of the nature of the work environment, which in turns affects their attitudes towards engaging in entrepreneurial activities. In other words, the implementation of HRM practices can not only enhance employees' ability to perform job-related tasks, but also influence their perceptions of the firm (Laursen & Foss, 2003; McClean & Collins, 2011), which ultimately affects their behaviour. The purpose of this study is to contribute to this research stream by examining the underlying processes whereby employees' perceptions about firms' investment in their skills development (perceived investment in employee development – PIED) influences EEA. Such insights will help managers who are charged with organizing firms' HRM practices to enhance corporate entrepreneurship.

Drawing on the social information processing theory, Figure 1 depicts the conceptual framework that focuses on exploring *how* and *when* PIED is related to EEA (see Figure 1). We test our framework using two studies of Chinese state-owned enterprises (SOEs), one

based in Beijing (Study 1: survey N = 157) and the other based in Hangzhou (study 2: survey N = 112). We contribute to the extant literature in the following ways. First, we propose a relatively unexplored antecedent condition – PIED for EEA – and further differentiate two types of psychological climate (autonomy and innovation) as the mediators to explore the nature of this association. In doing so, this research adds to the growing interest in understanding the effects of a HRM practices-induced work environment on corporate entrepreneurship (e.g. Morris & Jones, 1993; Zahra, Hayton, & Salvato, 2004). Second, we differentiate between two types of supervisor behaviour aimed at encouraging creativity in the workplace: promoting collaboration and intellectual stimulation. We examine the moderating effects of these two types of supervisor behaviour on the PIED-psychological climate-EEA relationship. In doing so, we contribute to the literature by identifying the boundary conditions affecting the impact of an HRM practices-induced work environment on corporate entrepreneurship (e.g. Abraham, 1997; Lee, Wong, Der Foo, & Leung, 2011). Finally, our research extends the current limited literature on HRM practices within Chinese SOEs in the context of the corporate entrepreneurship association (e.g. Zhang & Jia, 2010). Given that Chinese SOEs play an increasingly important role in the global economy and that the impact of the Western-style management approaches on this type of entity remains relatively unknown, our study joins others in continuing to explore the managerial mechanisms of Chinese SOEs (Sun, 2000; Yu & Frenkel, 2013).

"Insert Figure 1 about Here"

Theory and Hypotheses

HRM Practices-induced Work Environment and Corporate Entrepreneurship

The social information processing theory suggests that employees' shared perceptions of their work environment influence individual employees' behaviour (Kraus, Ahearne, Lam, & Wieseke, 2012; Salancik & Pfeffer, 1978). Firms' HRM practices can affect the

employees' shared perceptions of their work environment. In particular, the implementation of HRM practices may lead employees to sense collectively their firm's commitment to investing in their skills development (McClean & Collins, 2011; Meijerink, Bondarouk, & Lepak, 2016). We refer to this type of shared perception as PIED.

Corporate entrepreneurship involves organization-wide entrepreneurial behaviour that purposefully and continuously recognises and exploits entrepreneurial opportunities (Hayton, 2005; Zahra, 2015). It is a process whereby a firm seeks to create new businesses, innovate and transform itself to cope with the increasing complexity and high-velocity changes within the business environment (Turner & Pennington, 2015; Zahra, 2015). In order to cultivate corporate entrepreneurship internally, scholars suggest that the firm should encourage its employees to embrace EEA. This is because EEA represents the individual employees' intention to engage in entrepreneurial acts (Franco, 2005), which appears to be the building block for corporate entrepreneurship (Croucher & Rizov, 2011; Finkle, 2012).

EEA can be manifested through the participation of two types of entrepreneurial initiative: *venturing* and *innovation*. Venturing emphasis on introducing new business ideas and embarking on new business operations (Guth & Ginsberg, 1990). Kuratko *et al.* (2015) further divide the pursuit of venturing initiatives into internal (the new businesses created reside within the current organizational structure) and external (the new businesses created exist outside the firm). Innovation, on the other hand, reflects the focus on actively engaging in research and development to invent new or to improve existing products (Hayton, 2005; Laursen & Foss, 2003). It involves translating the knowledge into new products/services (Turner & Pennington, 2015; Zahra, 2015). Venturing and innovation initiatives are likely to be interrelated in important and complex ways. For example, the establishment of a new business unit usually involves the introduction of new products (Kuratko *et al.*, 2015). In this

research, we propose that PIED can affect EEA (see Figure 1) because the former will foster individual employees' participation in either venturing or innovation initiatives.

From the venturing aspect, the social information processing theory (Kraus *et al.*, 2012; Salancik & Pfeffer, 1978) predicts that individual employees are more likely to embrace EEA when they develop a belief that their efforts to engage in venturing are the most appropriate behaviour to adopt. We argue that PIED motivates such beliefs. When a firm invests in employee development via HRM practices, it is signaling that it values and respects all of its employees (Dysvik & Kuvaas, 2012). This may motivate everyone to develop a shared obligation towards the firm and a belief that each employee must take the necessary action to ensure the firm's success. As a result, all employees will be more likely to consider that their efforts to introduce new business ideas are expected and encouraged in the workplace, and PIED reinforces such a perception. Consequently, individual employees will adopt EEA and engage in venturing acts (Lee *et al.*, 2011; Turner & Pennington, 2015).

From the innovation aspect, the social information processing theory (Kraus *et al.*, 2012; Salancik & Pfeffer, 1978) predicts that individual employees will embrace EEA if they develop a belief that their efforts to participate in innovation are an appropriate behaviour to adopt. Similarly, we argue that PIED also motivates such a belief. When a firm invests in employee development via HRM practices, this sends a signal to all employees that they have an opportunity to learn new knowledge and develop new competencies in their industry field (Lee & Bruvold, 2003). This will subsequently lead all employees to believe that the firm wants them to use their newfound knowledge and competence to help the firm to improve its business operations. These actions might include developing new products or finding ways to refine existing ones (Laursen & Foss, 2003; Magala, Rutherford, & Holt, 2007). Thus, PIED reinforces all employees' beliefs that their firm expects and encourages them to participate in the workplace. Consequently, the individual employees will be more likely to embrace EEA,

given that innovation is the essence of EEA (Guth & Ginsberg, 1990). Combining the arguments from both the venturing and innovation aspects, we posit that a relationship exists between PIED and EEA.

> *Hypothesis 1: There is a positive relationship between perceived investment in employee development and employee corporate entrepreneurship behaviour.*

Psychological Climate as Mediator

According to the social information processing theory (Kraus *et al.*, 2012; Salancik & Pfeffer, 1978), the nature of the work environment can send a cue to individual employees about what attitudes the firm encourages or expects in the workplace, and subsequently influence individual employee's likelihood of adopting a specific behavior. Individual employees' perceptions of the work environment make up the psychological climate (Durcikova, Fadel, Butler, & Galletta, 2011; Koys & DeCotiis, 1991). We differentiate between two types of psychological climate in this study: the climate for autonomy and the climate for innovation. Using these two types of psychological climate, we can elaborate on our earlier explanations that lead to the development of hypothesis 1.

We define the "climate for autonomy" as the individual employee's perception that his/her firm encourages self-determination in the workplace with respect to work procedures, goals, and priorities (Durcikova *et al.*, 2011; Koys & DeCotiis, 1991). From the venturing aspect, the individual employees' autonomous behavior determines whether or not he/she will take the initiative to participate in venturing acts (Morris, Davis, & Allen, 1994; Zahra *et al.*, 2004). In order for the individual employee to adopt autonomous behavior, he/she needs to perceive that such behavior is encouraged in the workplace. We expect that PIED can affect EEA through the climate for autonomy (see Figure 1). The social information processing theory explains the preceding expectation that highlights the individual employee's perception that his/her work environment influences his/her behavior (Kraus *et al.*, 2012). When all of the employees in the workplace believe that the firm has a long-term

commitment to helping them to develop new skills, they will collectively develop a sense of responsibility for the firm's survival and success (Dysvik & Kuvaas, 2012; Lee & Bruvold, 2003). This will inspire individual employees to believe that they needs to take an initiative and find ways to help the firm to achieve better performance (McClean & Collins, 2011). As a result, employees will develop a psychology climate for autonomy by perceiving that they have greater authority over planning their work procedures, goals, and priorities. When employees develop such perceptions, they will be more likely to engage in activities related to venturing. This is because venturing-related activities require independent thinking and taking on new business initiatives or projects when sensing new business opportunities (Morris & Jones, 1993). In other words, employees are more likely to embrace EEA if they perceive that they have the autonomy to manage their work procedures, goals and priorities. Accordingly, we suggest that:

> *Hypothesis 2: A climate for autonomy mediates the relationship between perceived investment in employee development and employee corporate entrepreneurship behavior.*

A "climate for innovation" is defined as an individual employee's perception that his/her firm encourages him/her to develop novel and useful ideas in the workplace (Durcikova *et al.*, 2011). To facilitate a climate for innovation, we suggest that the firm needs to find ways to help individual employees to develop the perception that the firm encourages the development of novel and useful ideas in the workplace. Prior research has suggested that the adoption of HRM practices enables firms to develop a work environment that embraces innovation activities (e.g. Hayton, 2005; Laursen & Foss, 2003). This is because the implementation of HRM practices sends signals to all employees that the firm wishes to develop the employees' competencies further within their job and is committed to helping them to learn new skills in the long term (Dysvik & Kuvaas, 2012). When the individual employee tries to make sense of the work environment, he/she will be more likely to learn

that the firm is willing to invest in him/her beyond the short-term and to use his/her newly-developed competencies to develop creative approaches to solving problems. This will lead individual employees to develop a perception that the firm expects them to engage in innovation and in fact supports this. An important aspect of EEA is for the individual employee to participate in innovation-related activities (Guth & Ginsberg, 1990; Magala *et al.*, 2007). Such activities often involve employees adopting new and creative ways to solve problems. In order to do so, employees usually need to feel that the firm fully supports their participation, in order to avoid possible penalties should their actions fail (Hornsby, Kuratko, & Montagno, 1999; Magala *et al.*, 2007). Drawing on the social information processing theory, when employees study the work environment to determine the most appropriate behavior to follow within the firm and sense that their managers encourage innovation, they are more likely to participate in EEA (see Figure 1). Thus, we hypothesize:

> *Hypothesis 3: A climate for innovation mediates the relationship between perceived investment in employee development and employee corporate entrepreneurship behavior.*

Supervisors' Behaviors as a Moderator

The social information processing theory posits that supervisors' behaviour can influence individual employees' perceptions of the workplace setting (Kraus *et al.*, 2012; Salancik & Pfeffer, 1978). Consistent with this perspective, we consider moderators that regulate the extent to which individual employees transfer the meaning attached to the work environment (PIED) to their individual perception of the work environment (the psychological climate). In particular, we differentiate between two types of supervisor behaviour aimed at promoting creativity in the workplace: promoting collaboration and intellectual stimulation.

Promoting collaboration represents a type of supervisor behaviour that sends an implicit signal to all employees that the managers consider that collaboration to be important within that firm (Akgün, Keskin, Byrne, & Gunsel, 2011; Kahn, 1996). We expect that supervisor behaviour aimed at promoting collaboration within the firm can strengthen the effect of PIED on the climate for autonomy (see Figure 1). As we argued above, the influence of PIED on the climate for autonomy is due to individual employees' perceptions that they need to take the initiative in enhancing the firm's performance in responding to the firm's commitment to employee skill development. When supervisors encourage teamwork in the workplace, we can argue from the angle of the social information processing theory that the individual employees will cope with this influence from the work environment and start to participate in teamwork more frequently. The prior literature suggests that collaboration can reduce employees' fears about expressing their own opinions and feeling that they are the only one taking specific actions (Akgün *et al.*, 2011; Morris *et al.*, 1994). Individual employees will be more likely to develop a stronger perception that the firm encourages them to self-determine their work procedures, goals and priorities in the workplace in a psychological climate for autonomy. This is because they will feel less afraid to take the initiative to engage in venturing-related activities when facing a small team of co-workers than when facing a large number of co-workers within the firm as a whole. Based on the above discussion, we predict:

Hypothesis 4: Promoting collaboration positively moderates the relationship between perceived investment in employee development and the climate for autonomy.

Intellectual stimulation represents another type of supervisor behaviour that aims to increase the followers' interest in and awareness of any problems, and also encourages them to think about solving these problems in new ways (Rafferty & Griffin, 2004; Zhou, Hirst, & Shipton, 2011). A high degree of intellectual stimulation means that managers encourage

their employees to pursue new approaches to addressing the challenges that firms face and developing problem-solving capabilities (Zhou *et al.*, 2011). One of the underlying assumptions of the social information processing theory is that managers play an important role in shaping the work environment, which subsequently influences employee behaviours (Kraus *et al.*, 2012). We expect that intellectual stimulation will amplify the effects of PIED on the climate for innovation (see Figure 1).

As previously discussed, PIED indicates to all employees the firm's long-term commitment to developing their skills, so that they will be better equipped to solve problems using creative approaches. Consequently, individual employees will be more likely to sense that their firm encourages innovation in the workplace and to develop a psychology climate for innovation. Under the conditions of high intellectual stimulation, we argue that such an association becomes even more intense. This is because, under such conditions, the individual employees may feel that their managers are deliberately trying to inspire them to use more creative methods to solve problems and develop better problem-solving skills (Zhou *et al.*, 2011). Combining this with the perception that the firm is committed to investing in employee development, we argue that the individual employees will feel that the firm truly intends to develop their competencies and rely on them to solve problems using creative approaches. Ultimately, the individual employees will develop a stronger perception that creativity is encouraged in the work environment. This leads to our next hypothesis:

Hypothesis 5: Intellectual stimulation positively moderates the relationship between perceived investment in employee development and a climate for innovation.

Research Method

Our research context – Chinese SOEs in the manufacturing sector – provides an excellent setting for testing our hypotheses for the following two reasons. First, the Chinese economic reform encouraged the SOEs to adopt a Western style of management philosophy

(such as HRM practices) for the purpose of improving their competitiveness in the global marketplace (Sun, 2000; Zhou *et al.*, 2011). Second, corporate entrepreneurship appears to be an important component of Chinese SOEs' revitalisation. Prior studies have reported that many Chinese SOEs have adopted both market- and learning-oriented strategies with an emphasis on corporate entrepreneurship, in order to introduce system-wide changes and transform their management and operational processes from a Maoist era style to a more modern, Western style (Liu, Luo, & Shi, 2002; Zheng & Scase, 2013).

We tested the hypotheses using two independent survey-based studies (carried out in 2014) of large Chinese SOEs in the manufacturing sector. Based on the suggestions of prior studies (e.g. Kuratko *et al.*, 2015; Turner & Pennington, 2015; Zhang & Jia, 2010), we selected organisations that had actively engaged in corporation entrepreneurship activities, such as creating new business units and introducing new products and services. To avoid being forced to rely on a convenience sample and ensure a high level of collaboration from the SOE executives, we following the recommendations of scholars who had studied HRM in large organisations (Meijerink *et al.*, 2016). We first constructed a sampling frame based on personal contacts and referrals to choose SOEs that fitted the above selection criteria. This resulted in a sampling frame of eight SOEs. We then invited them to participate in the research. Overall, two SOEs agree to participate, giving an inclusion rate of 25%.

Instead of designing a single survey-based research that included both SOEs, we chose to design two independent studies, each focused on a single organisation. This was because focusing on a single organisation allowed us to avoid the effect of unobserved differences in the organizations' external environments and also matches the previous corporate entrepreneurship research (De Clercq, Dimov, & Belausteguigoitia, 2016). It also enabled us to engage a more situated research design that captured a specific organisational context (De Clercq *et al.*, 2016; Yu & Frenkel, 2013). Furthermore, it offered us the

flexibility to design the latter study in such a way that it would extend the findings from the earlier study, as well as replicate the earlier findings to improve the generalisability of our research (Kraus *et al.*, 2012). Rather than discussing each study's results separately, we first provide the sample characteristics of each study, and then discuss the methodology and findings together. Study 1 sets out to test hypotheses 1-3, while Study 2 aims first to replicate the results of Study 1 and then test hypotheses 4-5.

In Study 1, we surveyed employees (who participated in manufacturing projects) from a large Chinese SOE, headquartered in Beijing, with an annual revenue close to 25 billion USD and around 100,000 employees. Its main business is to design and supply equipment and services to industrial customers located in mainland China, India, Africa, Russia, countries in the Asia Pacific region, and Saudi Arabia. With the cooperation of executives from this SOE, we sent out a total of 200 surveys and received 157 positive responses. The response rate was 78.5%. The average age of the respondents was 33.71 (*SD* = 7.80), 59.87% were men (94 out of 157), and their average tenure was 7.64 (*SD* = 5.53) years. In Study 2, we surveyed another large Chinese SOE (based in Hangzhou) with an annual revenue close to 10 billion USD, and over 6000 employees. Its main business is to design and supply machinery equipment to industrial customers located in mainland China, India, Africa, Russia, East European countries, and the USA. The average age of the respondents was 32.76 (*SD* = 7.98), 77.68% were men (87 out of 112), and their average tenure was 8.40 (*SD* = 6.61) years. For both studies, we adopted the approach suggested by Armstrong and Overton (1977) of comparing early and late responses to estimate the non-response bias. The t-test results show that the probability of non-response bias is minimal in both studies.

We used the same measurements for PIED, climate for autonomy, climate for innovation, and EEA in both Study 1 and 2. All of the measurements were adopted and modified from existing studies, such as PIED (Dysvik & Kuvaas, 2012; Lee & Bruvold,

2003), the two types of psychological climate (autonomy and innovation; (Durcikova *et al.*, 2011), and EEA (Eddleston, Kellermanns, & Zellweger, 2012; Zhang & Jia, 2010). In Study 2, we included additional scales to assess supervisor behaviour. For promoting collaboration, we adapted and modified the scales of Akgün *et al.* (2011) and Kahn (1996) to assess the extent to which the employees perceived that the managers' actions encouraged cooperation and teamwork in the workplace. Intellectual stimulation uses the scales adapted from Zhou *et al.* (2011) to assess the extent to which the employees perceived that their managers' actions increased their ability and propensity to think and solve problems in new ways. We used a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree) to assess all of the measurement items in both Study 1 and 2. Appendix 1 displays all of the measurement items.

We first developed these scales in English and then translated them into Mandarin. All three authors of this paper are fluent in both English and Mandarin. We all assessed these scales independently and found satisfactory internal reliability. We also conducted interviews with two executives from the SOE to ensure the content and face validity of our measurement scales in the Chinese version. We considered several control variables, such as employees' gender, tenure, and age, which can potentially influence corporate entrepreneurship at the individual level (Hornsby *et al.*, 1999; Kuratko, Ireland, & Hornsby, 2004). Furthermore, we controlled for employees' education level as this may influence individuals' self-efficacy and ability to engage in entrepreneurial acts (Krueger & Brazeal, 1994; Piperopoulos & Dimov, 2015). These control variables are included in both Study 1 and 2.

We assessed the measurement model in terms of its reliability, validity, and discriminant validity. We calculated the fit of our measurement using confirmatory factor analysis. According to a suggestion by Hair, Black, Babin, and Anderson (2010) regarding the comparative fit index (CFI) and root mean square error of approximation (RMSEA), our hypothesised model exhibited the best fit in Study 1 (X^2 = 89.028; df = 48; X^2/df = 1.855; p

< .001, CFI = .959; RMSEA = .074) and Study 2 (X^2 = 164.067; *df* = 104; X^2/df = 1.578; p < .000, CFI = .948; RMSEA = .072). We also followed the suggestion of prior studies and assessed the reliability of the scales using the composite reliability (CR) value and the convergent validity using the average variance extracted (AVE) value (Hair *et al.*, 2010). Table 1 shows that all of the CR values are above .70 and that the AVE values are above .50 in both Study 1 and 2. Thus, all of the composite reliability and convergent validity are sufficient. In terms of discriminant validity, we calculated the square root value of the AVE for each construct. The resulting value for each construct is greater than all of its correlations with the other constructs (see Table 1) in both Study 1 and 2. Thus, discriminant validity is established.

"Insert Table 1 about Here"

In this research, we assessed both independent and dependent variables by the single source. To reduce potential common method bias, we followed the suggestion of Podsakoff, MacKenzie, and Podsakoff (2012) and organised the data collection process in such a way as to ensure the anonymity and confidentiality of the responses, and also to cover the items relating to the independent variables before addressing those relating to the dependent variables. We also obtained responses from 20 immediate line supervisors from the SOE regarding their efforts to invest in employees' skill development, corresponding to our PIED questions. The correlation coefficient between the immediate line supervisors' responses and the corresponding employees' responses (Study 1: r = .773, p < .000; Study 2: r = .749, p < .000) indicates that a high correlation existed, suggesting that the key informants provided reliable evaluations. For the statistical remedies, we performed Harman's single factor test and common maker variable test (using the employees' perception of wage fairness) to identify any potential common method bias (Podsakoff *et al.*, 2012) in Study 1 and 2. Both results suggest that common method bias should not be a concern for either study.

"Insert Table 2 about Here"

We present our findings from Study 1 in Table 2. We find that the relationship between PIED and EEA is positively significant (Model 2: $\beta = .465$, $t = 8.226$, $p < .001$). Thus, hypothesis 1 holds true. Hypotheses 2 and 3 suggest mediation effects. To test these hypotheses, we use the approach suggested by Hayes (2013). Our results suggest that PIED has a positive and significant effect on both the climate for autonomy (Model 3: $\beta = .475$, $t = 6.620$, $p < .001$) and the climate for innovation (Model 4: $\beta = .496$, $t = 7.246$, $p < .001$). The effects of the climate for autonomy (Model 5: $\beta = .250$, $t = 3.931$, $p < .001$) and climate for innovation (Model 5: $\beta = .143$, $t = 2.155$, $p < .050$) on EEA are positive and significant when accounting for the effect of PIED. Finally, we calculate the indirect effects using a bootstrap analysis with 10,000 samples. Our results suggest that the indirect effects between PIED and EEA through the climate for autonomy ($\beta = .119$) and low behaviour uncertainty ($\beta = .071$) are all positive and significant, with a 95% confidence interval which does not include zero. Thus, hypotheses 2 and 3 hold true, respectively.

We present the findings of Study 2 in Table 3. The results from this analysis (Models 6-10) replicate our earlier findings from Study 1. We found that the effect of PIED on EEA is positive and significant ($\beta = .602$, $t = 8.124$, $p < .001$), and that the climate for autonomy (indirect effect = .065, $p < .100$) and the climate for innovation (indirect effect = .093, $p < .050$) mediate the PIED-EEA relationship. Furthermore, we investigate the moderation effects predicted in hypotheses 4 and 5. We adopt the method suggested by Hayes (2013) to examine the effects of the statistical interaction between the independent variable and the moderator in predicting the dependent variable. Our results show that promoting collaboration moderates PIED and the climate for autonomy (Model 11: $\beta = .162$, $t = 2.114$, $p < .050$) while intellectual stimulation moderates PIED and the climate for innovation (Model 13: $\beta = .174$, $t = 2.808$, $p < .010$). Thus, hypotheses 4 and 5 hold true.

"Insert Table 3 about Here"

Finally, we conduct an additional analysis to detect the possible moderation-mediation effects, following the approach suggested by Hayes (2015) to assess whether promoting collaboration positively moderates the mediation relationship from PIED through the climate for autonomy to EEA. Our analysis produces two regression models (Model 11 and 12). We calculate the index of moderated mediation using a bootstrap analysis with 10,000 samples and the results suggest that the index is significant (index = .053, $p < .050$). Thus, this confirms the moderation-mediation effect, to assess whether intellectual stimulation positively moderates the mediation relationship from PIED through the climate for innovation to EEA. We follow the same procedure to estimate Model 13 and 14, and calculate the index of moderated mediation using a bootstrap analysis with 10,000 samples. The results suggest that the index is significant (index = .060, $p < .050$). Thus, this also confirms this moderated-mediation effect. In general, the findings from Study 2 allow us to explain the boundary conditions when PIED affects EEA.

General Discussion and Concluding Remarks

Theoretical Implications and Future Research

First, to the best of our knowledge, our research is the first to consider the effect of PIED on EEA. We propose and test the relatively unexplored area of employee perceptions of firms' HRM practices efforts – PIED, as antecedent condition for EEA. Using the social information processing theory, we argue that PIED can persuade individual employees actively to participate in both venturing- and innovation-related activities, which reflects EEA. Our findings from study 1 confirm our argument. In addition, we suggest that individual employees' perceptions of the firm's efforts to invest in their skill development can affect their attitudes towards participating in entrepreneurial activities by influencing their

psychological climate. Drawing from the social information processing theory, we proposed and tested two specific types of psychological climate that can transmit the effect of PIED to EEA from both the venturing (climate for autonomy) and innovation (climate for innovation) aspects. Our findings from study 1 confirm our propositions and offer a deeper understanding of the PIED-EEA relationship. Overall, these findings add to the growing interest in understanding the effects of an HRM practices-induced work environment on corporate entrepreneurship (e.g. Morris & Jones, 1993; Zahra *et al.*, 2004). Further studies might explore other types of HRM practices-induced work environment that may also play an important role in promoting corporate entrepreneurship.

Second, our study offers insights into "when" PIED affects corporate entrepreneurship by proposing and testing two moderators – promoting collaboration and intellectual stimulation. In line with the social information processing theory, supervisor behaviour played an important role in influencing individual employees' perceptions of their work environment (Kraus *et al.*, 2012; Salancik & Pfeffer, 1978). Building on this logic, we differentiate between two types of supervisor behaviour aimed at promoting creativity in the workplace: promoting collaboration and intellectual stimulation. In Study 2, we found that promoting collaboration not only strengthens the relationship between PIED and the climate for autonomy, but also moderates the entire intermediation process - from PIED, through the climate for autonomy, to EEA. Similarly, our results also suggest that intellectual stimulation enhances the effect of PIED on the climate for innovation, as well as moderating the PIED-climate for the innovation-EEA mediation relationship. Because few studies have investigated this conditional process, this study should be viewed as the first step towards building knowledge about "when" a HRM practices-induced work environment can affect corporate entrepreneurship (e.g. Abraham, 1997; Lee *et al.*, 2011). Future studies can follow

our steps to explore different contingency factors and so help to explain the PIED-EEA association. Together, we can offer a clearer picture of the formation of this association.

Our final contribution pertains to the empirical context. In particular, our research contributes to the growing body of literature on the implementation of Western management systems within Chinese SOEs (e.g. Sun, 2000; Yu & Frenkel, 2013; Zhang & Jia, 2010). As Chinese SOEs attempt to transform their management and operation processes from the Maoist era style to a more modern Western style to increase their competitiveness in the marketplace, they are embracing market- and learning-oriented strategies with an emphasis on CE (Liu *et al.*, 2002; Zheng & Scase, 2013). By examining the effect of a HRM practice-induced work environment on corporate entrepreneurship development, this study offers fresh insights into the strategic HRM in emerging Asian economies. Future studies may examine the replicability of our findings in other institutional and cultural contexts.

Managerial Implications

Beyond the theoretical implications, this study offers several critical insights for managers. First, we found that PIED can influence the development of EEA. If managers wish to use HRM practices to promote corporate entrepreneurship, they should channel their efforts towards ensuring that their employees feel positively about the firm's efforts to invest in employee skills development. Second, we found that a psychology climate plays an important role in establishing a connection between PIED and EEA. A major practical message of our finding is that, if managers wish to promote EEA by developing PIED in the workplace, they need to communicate in ways that ensure that their employees perceive that the firm encourages autonomy and innovation in the workplace. In this way, employees will be more likely and willing to participate in activities related to corporate entrepreneurship. Finally, our findings have a message for managers who wish to amplify the effects of PIED.

We suggest that managers should either promote teamwork or stimulate their employees intellectually to find new ways to solve problems. Accordingly, their employees will be more likely to develop a perception that their managers encourage autonomy- and innovation-related activities in the workplace.

Limitations

We acknowledge that there are some limitations to our study due to our research design. The first limitation is the fact that we utilised data collected from only two SOEs in our study, which raises concerns about the generalisability of our findings. While we focus on only two Chinese SOEs, the participants studied are involved in various manufacturing projects across different business units. This suggests that our findings possess some degree of generalisability. Still, the replication of our results by undertaking a large-scale survey involving a large number of firms in different settings and contexts would considerably bolster the generalisability of our findings. Second, the cross-sectional design of our study did not allow us to draw any definite conclusions about the causal processes over time. Moreover, our survey methodology, that measures a single point in time, limits our conclusions about the employees' perceptions. Thus, we must acknowledge that a set of relationships among the variables occurs simultaneously, rather than being a purely causal single relationship (Holbert & Stephenson, 2002). Given that this causal relationship may develop over time, future studies might employ a longitudinal research design in order to confirm this causality empirically.

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Figure 1: Conceptual Model

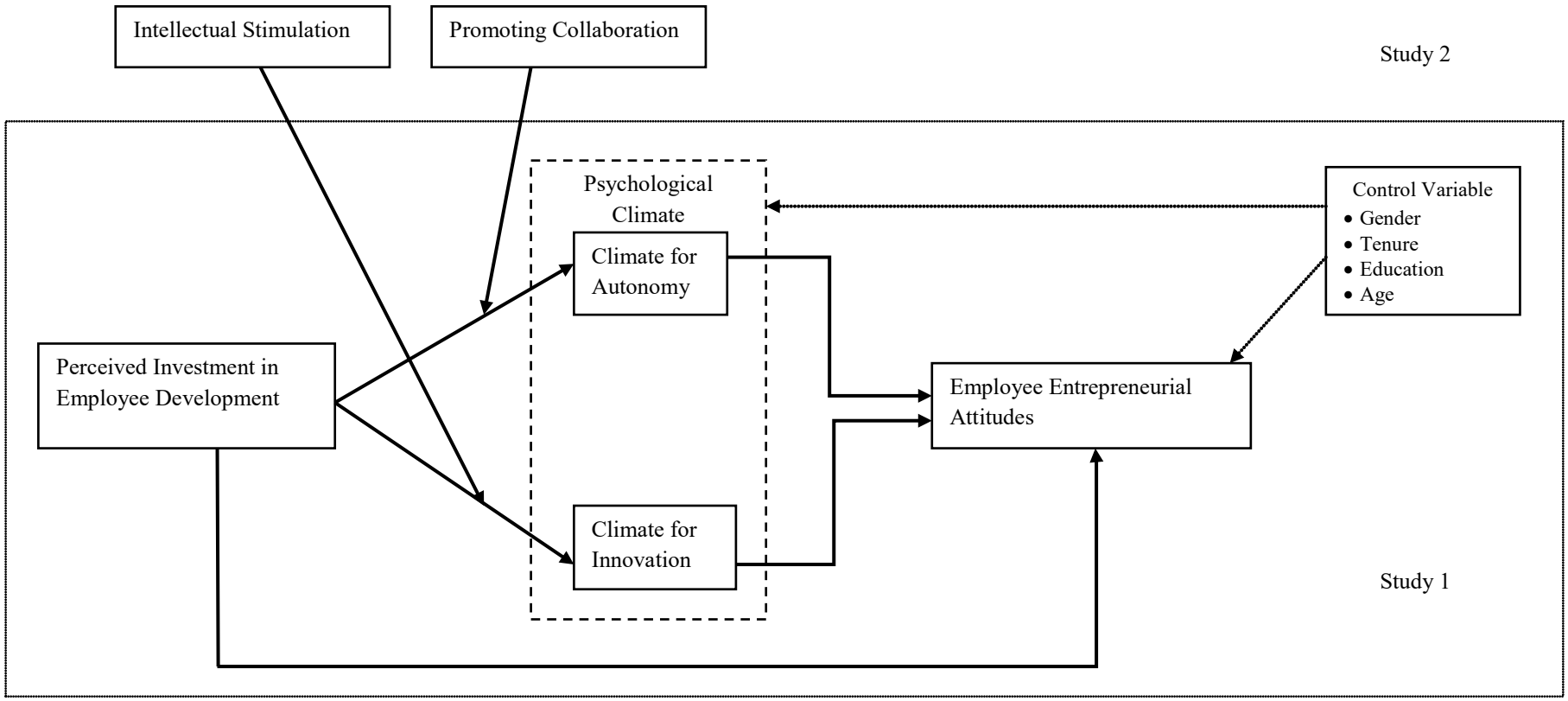

Table 1: Descriptive Statistics

Study 1	1	2	3	4	5	6	7	8		
1. Gender	---									
2. Log(Age)	-.143	---								
3. Log(Tenure)	-.115	.734*	---							
4. Education	.334*	-.142	-.102	---						
5. Climate for Autonomy	-.058	.168*	.256*	.071	**.817**					
6. Climate for Innovation	-.008	.132	.192*	.117	.556*	**.790**				
7. Perceived Investment in Employee Development	.039	.099	.109	.080	.485*	.521*	**.825**			
8. Employee Entrepreneurial Attitudes	.154	.100	.055	.266*	.528*	.500*	.569*	**.774**		
Mean	.599	1.516	.758	3.344	3.775	3.855	3.847	3.944		
Standard Deviation	.492	.101	.350	1.353	.707	.682	.586	.598		
Composite Reliability	---	---	---	---	.856	.832	.865	.818		
Average Variance Extracted	---	---	---	---	.667	.624	.681	.599		
Study 2	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
9. Gender	---									
10. LogAge	-.116	---								
11. LogTenure	-.120	.840*	---							
12. Education	.092	-.384*	-.429*	---						
13. Climate for Autonomy	.089	-.263*	-.173	-.059	**.812**					
14. Climate for Innovation	.112	-.135*	-.094	-.198*	.611*	**.805**				
15. Perceived Investment in Employee Development	.001	-.089	-.114	-.141	.320*	.459*	**.811**			
16. Employee Entrepreneurial Attitudes	-.020	-.217*	-.198*	-.039	.525*	.568*	.633*	**.757**		
17. Promoting Collaboration	.002	-.262*	-.268	.037	.491*	.549*	.470*	.660*	**.813**	
18. Intellectual Stimulation	.054	-.275*	-.256	.029	.554*	.557*	.510*	.629*	.669*	**.864**
Mean	.777	1.505	.712	4.027	3.381	3.188	3.574	3.586	3.549	3.619
Standard Deviation	.418	.094	.457	1.094	.774	.773	.739	.725	.784	.791
Composite Reliability	---	---	---	---	.852	.846	.850	.799	.854	.855
Average Variance Extracted	---	---	---	---	.659	.648	.657	.573	.661	.747

Notes:
Study 1: N = 157; Study 2: N = 112; *p < .05
Average Variance Extracted (AVE) square root are show in bold on the correlation matrix diagonal
Log = logarithmic transformation
Gender: 1 = Male; 0 = Female
Education: 0 = No formal education/Apprenticeship; 1 = Elementary School; 2 = High school/Professional school; 3 = Junior college (Diploma); 4 = Undergraduate (University); 5 = Postgraduate (University)

Table 2: Study 1 Findings

	Model 1	Model 2	Model 3	Model 4	Model 5
Outcome Variable	EEA	EEA	Autonomy	Innovation	EEA
Control Variables					
Gender	.108(1.085)	.091(1.092)	-.118(-1.123)	-.067(-.660)	.130(1.697)†
LogAge	1.057(1.563)	.878(1.555)	-.434(-.607)	-.208(-.305)	1.016(1.963)†
LogTenure	-.067(-.345)	-.140(-.863)	.504(2.463)*	.322(1.645)	-.312(-2.060)*
Education	.114(3.135)**	.093(3.069)**	.041(1.067)	.053(1.451)	.075(2.687)**
Predictor					
PIED		.465(8.226)***	.475(6.629)***	.496(7.246)***	.276(4.392)***
Mediator					
Autonomy					.250(3.931)***
Innovation					.143(2.155)*
Constant	1.947(2.058)*	.562(.697)	2.157(2.114)*	1.880(1.926)†	-.247(-.328)
Model Statistics					
F-Value	4.130**	15.213***	12.173***	12,949***	17.398***
Degree of Freedom	(4, 152)	(5, 151)	(5, 151)	(5, 151)	(7, 149)
P-Value	.003	.000	.000	.000	.000
R-Square	.098	.357	.287	.300	.484

Notes:
N = 157, *** p < 0.001; ** p < 0.010; * p < 0.050; † p < 0.100
Coefficients are reported with t-value in parentheses
PIED: Perceived Investment in Employee Development; EEA = Employee Entrepreneurial Attitudes; Autonomy = Climate for Autonomy; Innovation = Climate for Innovation

Table 3: Study 2 Findings

	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14
Outcome Variable	EEA	EEA	Autonomy	Innovation	EEA	Autonomy	EEA	Innovation	EEA
Control Variables									
Gender	-.072(-.443)	-.067(-.523)	.131(.8003)	.209(1.346)	-.141(-1.220)	.084(.550)	-.110(-.935)	.147(1.071)	-.138(-.157)
LogAge	-1.451(-1.196)	-1.330(-1.389)	-3.030(-2.476)*	-1.615(-1.398)	-.320(-.364)	-2.553(-2.275)*	-.341(-.379)	-.954(-.928)	-.785(-.885)
LogTenure	-.193(-.758)	-.003(-.012)	.188(.877)	.058(.238)	-.056(-.312)	.236(.998)	-.064(-.346)	.090(.420)	-.022(-.119)
Education	-.107(-1.557)	-.012(-.210)	-.087(-1.228)	-.150(-2.243)	.040(.784)	-.057(-.857)	.017(.328)	-.119(-1.984)*	-.039(.749)
Predictor									
PIED		.602(8.124)***	.291(3.120)**	.435(4.863)***	.444(6.074)***	.143(1.450)	.506(7.150)***	.248(2.702)**	.456(6.053)***
Mediator									
Autonomy					.219(2.745)**		.326(4.702)***		
Innovation					.215(2.541)*				.338(4.570)***
Moderator									
PC						.405(4.356)***			
IS								.450(5.178)***	
Interaction									
PIED x PC						.162(2.114)*			
PIED x IS								.174(2.808)**	
Constant	6.393(3.640)**	3.535(2.474)*	6.998(3.831)***	4.463(2.588)*	1.045(.768)	7.174(4.402)***	3.060(2.209)*	4.873(3.265)**	3.656(2.7115)**
Model Statistics									
F-Value	2.076†	15.868***	5.281***	7.802***	18.543***	7.347***	19.542***	11.800***	19.185***
Degree of Freedom	(4, 107)	(5,106)	(5, 106)	(5, 106)	(7, 104)	(7, 104)	(6, 105)	(7, 104)	(6, 105)
P-Value	.089	.000	.000	.000	.000	.000	.000	.000	.000
R-Square	.072	.428	.182	.269	.555	.331	.528	.443	.523

Notes:

N = 112, *** p < 0.001; ** p < 0.010; * p < 0.050; † p < 0.100

Coefficients are reported with t-value in parentheses

PIED: Perceived Investment in Employee Development Climate; EEA = Employee Entrepreneurial Attitudes; Autonomy = Climate for Autonomy; Innovation = Climate for Innovation; IS: Intellectual Stimulation; PC: Promoting Collaboration

Appendix 1: Measurement

Measurement	Study 1*	Study 2*
Perceived Investment in Employee Development		
My company investing time and money in employee development	.808	.910
My company focuses on developing our skills and abilities	.820	.809
My company invests more heavily in employee development than comparable companies	.847	.698
Climate for Autonomy		
I make most of the decisions that affects how my job is performed.	.692	.728
I determine my own work procedure.	.841	.852
I schedule my own work activities.	.902	.849
Climate for Innovation		
My supervisor encourages me to develop my ideas	.854	.782
This company is always moving toward the development of new answers	.822	.878
People in this company try new approaches to tasks	.684	.749
Employee Entrepreneurial Attitudes		
I always try to suggest ways to develop many new lines of business.	.816	.783
I favour strong R&D, technological leadership and innovation.	.748	.832
I want my company to initiate actions to which competitors then respond	.757	.644
Promoting Collaboration		
There is an emphasis in our company on achieving goals collectively.		.822
There is an emphasis in our company on creating mutual understanding.		.852
There is an emphasis in our company on sharing ideas, information and/or resources.		.762
Intellectual Stimulation		
My supervisor challenges me to think about old problems in new ways.		.873
My supervisor challenges me to rethink some of the basic assumptions about my work.		.855
My supervisor has forced me to rethink some of the things that I have never questioned before.		---

Notes:

* Factor loadings are standardized

--- Delete duo to low factor loading