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Exploratory innovation, exploitative innovation and employee creativity: The moderation of collectivism in Chinese context

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# Exploratory innovation, exploitative innovation and employee creativity

## The moderation of collectivism in Chinese context

Collectivism in  
Chinese  
context

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### Abstract

**Purpose** – The purpose of this study is to investigate the relationships between exploratory/exploitative innovation and employee creativity in the Chinese context and how these two relationships can be moderated by an important cultural dimension – collectivism.

**Design/methodology/approach** – A theoretical framework was developed to explore the relationships between exploratory/exploitative innovation, employee creativity and collectivism. Data were collected by sending out surveys to managers and employees in various industries in mainland China. Hypotheses were tested using hierarchical regressions.

**Findings** – The results show that both exploratory innovation and exploitative innovation are positively related to employee creativity. Furthermore, collectivism negatively moderates the effects of both types of innovation on employee creativity, despite its positive main effect.

**Originality/value** – This study explores the relationship between organizational innovation and individual employee creativity in the Chinese context. This paper empirically analyzes the moderating effect of collectivism in the relationship between organizational innovation and employee creativity. It also indicates the factors inherent in Chinese culture that influence innovation and gives explanations from education, subordinate relation, etc.

**Keywords** Collectivism, Exploratory innovation, Employee creativity, Exploitative innovation

**Paper type** Research paper



## 1. Introduction

China has tremendously developed economically in nearly four decades, since the transition from a planned to market economy. Since the early 1990s, China's gross domestic product (GDP) has grown enormously that it exceeded Germany in 2007 and Japan in 2010, thereby becoming one of the largest economies in the world second only to the USA[1]. There is no doubt that innovation has played a vital role in China's economic growth, which has shifted the country from a world factory that produced low-value added products to the most innovative economy significantly producing high value-added products (Zhang *et al.*, 2012). China's ranking of the Global Innovation Index[2] has steadily risen from 35 in 2013 to 22 in 2017[3]. It is currently the only middle-income country that is ranked among the top 25 innovative industrialized and developed countries.

The surge in China's economy has been explained in different ways. While environmental factors such as the growth of foreign direct investment (Hu and Jefferson, 2009) and government subsidies (Li, 2012) are the major reasons, creative talent of individuals has not only contributed to China's rapid development to date, but will also further innovation in China. Hence, our main research question is:

*RQ1.* What can help develop creative talents in China?

Individual creativity can be perceived as a function of individual traits, such as cognitive capabilities, personality and upbringing, and contextual factors, such as their cultural and organizational backgrounds (Hahn *et al.*, 2015; Oldham and Cummings, 1996). In this study, we mainly focus on contextual factors that can affect individual creativity, which has recently gained attention. The effects of organizational and cultural factors on individual creativity are examined, provided the facts that individuals spend most of their lifetime in various working organizations and that they are embedded in and profoundly influenced by their national cultural background. Specifically, we explore the relationship between organizational innovation activities and employee creativity, and the moderating effect of collectivism – a prominent dimension of the Chinese culture.

We are interested in the effects of organizational innovation on employee creativity for three reasons. First, even though it has been well established that employee creativity can be shaped by organizational context (Oldham and Cummings, 1996), less is known about whether and how it can be fostered and nurtured in organizations that are engaged in various innovation activities. Second, most of the previous studies that examined the relationship between creativity and innovation often at one specific level of analysis and rarely has there been cross-level research on this relationship (Anderson *et al.*, 2014; Sarooghi *et al.*, 2015). Third, it is intuitive and often assumed that the creativity–innovation relationship is unidirectional that creative employees precede organizational innovation (Anderson *et al.*, 2014; Valaei *et al.*, 2017); recently, some have researchers proposed a theoretical model of creativity–innovation cycle (Paulus, 2002; Lee *et al.*, 2007). While there has been some preliminary evidence from case studies that organizational innovation does contribute to the development of employee creativity (Lee *et al.*, 2007), systematic examination using quantitative methods is still lacking.

We explore the moderating effect of collectivism because we are interested in the innovation–creativity relationship in the Chinese context and aim to find out whether and how it differs from other cultures. Collectivism is one of the main cultural dimensions that are deeply rooted in Confucian tradition, thereby separating China from other cultures. Theoretically, the effect of collectivism on individual creativity is still underexplored. Intuitively, individuals in individualistic cultures are more likely to generate novel ideas, as they value uniqueness, whereas those in collectivistic cultures likely feel stronger pressure

of conformity and are more hesitant to express quite different views and hence are less creative (Goncalo and Staw, 2006; Kasof *et al.*, 2007). However, the picture seems to be more complicated. Research has shown that collectivism can increase individual and group creativity in certain social and organizational contexts (Eisenberg, 1999; Goncalo and Duguid, 2012), but how collectivism can interact with innovation activities carried out by organizations to affect employee creativity still remains unknown.

This study aims to fill the aforementioned gaps in extant literature and deepen the understanding of the relationship between organizational innovation and employee creativity in the Chinese context. We distinguish two types of organizational innovation – exploratory and exploitative – and explore their effects on employee creativity separately. This is because exploratory and exploitative innovation are essentially two different processes of implementing new ideas. While exploratory innovation activities pursue new initiatives radically different from organization's current technologies and practice, exploitative innovation activities build on current technologies and practice to achieve incremental improvement. Hence, they may have different impacts on employee creativity or may influence employee creativity in different ways. The rest of this paper proceeds as follows. In Section 2, we develop a theoretical model, from which four hypotheses are derived. In Section 3, we describe the methods used to test our hypotheses. Results are presented in Section 4, and finally Section 5 discusses our findings, their theoretical and practical implications, as well as the limitations and directions for future research.

## 2. Theory and hypotheses

Innovation and creativity are critical for companies to survive and remain viable in turbulent, complex and competitive environment (Anderson *et al.*, 2014; Devanna and Tichy, 1990). The relationship between creativity and innovation has been investigated extensively (Review by Sarooghi *et al.*, 2015). In a meta-analysis, Sarooghi *et al.* (2015) found that the relationships between creativity and innovation at various levels were positive, particularly strong at the individual level. Some later studies further confirmed the relationship between individual innovation and creativity under various conditions (Valaei *et al.*, 2017; Hwang *et al.*, 2017). While these studies have deepened the understanding of innovation–creativity relationship, they ignored that individual creativity could also be shaped by the social context. Our study aims to fill this gap and explores the cross-level relationship between innovation and creativity. We examine how employee creativity can be influenced by organizational innovation activities. In this section, a theoretical model explaining the effect of organizational innovation and collectivism on employee creativity has been developed.

### 2.1 Employee creativity

The classic definition of creativity is the ability to create novel and useful ideas (Amabile, 1998; Zhou and George, 2001). Individual creativity to a large degree depends on individual cognitive characteristics, given that it is often described as an intra-individual cognitive process of breaking habitual mental sets (Amabile, 1996; Rank *et al.*, 2004). For instance, Squalli and Wilson (2014) found that intelligence had a positive impact on individual creativity. Moreover, personality also seems to play a critical role. Gough (1979) developed a creativity personality scale to capture creative potential, which has been widely used in later studies to explain creativity (Madjar *et al.*, 2002; Oldham and Cummings, 1996).

More interestingly, creativity is less of an individual trait that is innate and difficult to change, rather it can be fostered and developed in certain organizational and cultural contexts (Amabile, 1988, 1998). In organizational settings, employee creativity has been found to be influenced by many factors, such as organizational culture (Hahn *et al.*, 2015),

job characteristics (Oldham and Cummings, 1996), availability of resources (Amabile, 1998; Katz and Allen, 1988), social network structure within organizations (Hahn *et al.*, 2015), leadership and supervision styles (Oldham and Cummings, 1996; Zhang and Bartol, 2010; Gong *et al.*, 2009) and supportive environments (Madjar *et al.*, 2002; Zhou and George, 2001). For example, Amabile (1998) argued that individual employees are more creative if they are intrinsically motivated by being encouraged to take risk and make mistakes, given the freedom to explore new ideas and possibilities and provided with enough resources, such as time and money to finish a project. Zhou and George (2001) also showed that dissatisfied employees are more creative when they perceive support from their coworkers and managers. Apart from organizational contexts, cultural contexts have also been found to play an important role in the development of creativity (Triandis, 1994, 1995; Westwood and Low, 2003; Saroghi *et al.*, 2015).

However, less is known about the combined effect of organizational and cultural contexts on employee creativity. In the current study, organizational innovation and collectivism and their interactive effect on employee creativity are studied.

### *2.2 Innovation and creativity*

Innovation is a concept usually closely related to, but different from creativity. However, they are different for at least two reasons. First, they have different antecedents. Rank and colleagues reviewed and summarized the relevant literature and found out that numerous variables affect innovation and creativity in different ways (Rank *et al.*, 2004). For example, while extroverts are more innovative, introverts are more creative (Boeddrich, 2004). Second, conceptually, creativity and innovation represent different stages of a process in which an actor – individual or organization – generates or produces something new and often useful as well. Creativity often involves generation of new ideas, whereas innovation mostly refers to implementation of new ideas (Amabile *et al.*, 1996; Anderson and King, 1993; Rank *et al.*, 2004). It seems to be intuitive that creativity is a prerequisite of innovation, as Amabile (2004, p. 1) pointed out:

No innovation is possible without the creative processes that mark the front end of the process: identifying important problems and opportunities, gathering information, generating new ideas, and exploring the validity of those ideas.

However, recently, it is increasingly recognized that the relationship between creativity and innovation is more dynamic and complex than linear. Some scholars believe that creativity and innovation enhance each other over time, thereby forming a creativity–innovation cycle. Creative ideas are implemented and result in innovative products; the response from the environment (e.g. market, customers) to the products can feed back into the next wave of novel ideas regarding new or improved products, the implementation of which ultimately leads to more innovation (Lee *et al.*, 2007; Paulus, 2002). Many studies have empirically tested the first half of the cycle, whereas less is known about how the second half happens. In this study, we propose mechanisms that explain how innovation can lead to higher level of creativity and form hypotheses to test our theory. Specifically, we focus on the relationship between creativity at the individual level and innovation at the organizational level.

We conceive organizational innovation as a social process of successfully implementing new ideas and turning them into useful outcomes (e.g. better procedures, practices or products) for an organization (Amabile, 1996; Anderson and King, 1993; Anderson *et al.*, 2014). Organizational innovation can in general be categorized into exploratory and exploitative innovation, depending on its proximity to existing technologies, products,

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services and market segments of a focal organization (Greve, 2007; Jansen *et al.*, 2006). Following Jansen *et al.* (2006, p. 1662), we define exploratory innovations as “radical innovations [. . . that] are designed to meet the needs of emerging customers or markets” and exploitative innovation as “incremental innovations [. . . that] are designed to meet the needs of existing customers or markets.” Exploratory innovations involve departure from the existing technologies and skills to create new products and services; they result in production of new knowledge. Organizations that engage in exploratory innovation are more flexible and can better respond to and prosper in the turbulent environment (Jansen *et al.*, 2006). By contrast, exploitative innovations build on the existing technologies and skills and make incremental improvement on the existing products and services. They exploit and refine the existing knowledge and skills (Benner and Tushman, 2003; Levinthal and March, 1993) to make production process more efficient (Zahra and George, 2002). Among many activities, exploration and exploitation are the fundamental activities of organizations and other adaptive systems (March, 1991; Cheng *et al.*, 2014).

Much research has been devoted to the effects of exploratory and exploitative innovations on firm performance (Jansen *et al.*, 2006). Despite the debate on the conceptualization of these two types of innovation (or in general exploration and exploitation), it seems to be a consensus among researchers that organizations should engage in both simultaneously and reach a balance between them to improve their performance and survival chances (Gupta and Shalley, 2006; He and Wong, 2004). While this line of research normally focuses on various indicators of organizational performance, it is surprising that virtually none has examined how exploration and exploitation affect employee creativity, which is one of the key sources of competitive advantage.

Exploration is highly risky and more likely than exploitation to result in failure (March, 1991). In other words, it is often highly risky for an organization to explore a new market, develop a new technology or produce a new product line (March, 1991). By engaging in exploratory innovation, the organization sends a signal that it is willing to take risk by allowing or even encouraging its employees to take risk. This will give employees a sense of security such that they can explore, imagine and generate pioneering ideas without worrying about the negative outcomes on their career brought by the failures resulting from being creative (Yoshida *et al.*, 2014). This sense of security further improves their intrinsic motivation to challenge and explore the unknown and interesting knowledge and technology (Amabile, 1996, 1998; Gagné and Deci, 2005; Lee *et al.*, 2007). Moreover, exploratory innovation often provides a vibrant learning environment for employees. It can foster intense communication, debating and collaboration among them, which can facilitate the mingling of different ideas generated by different people. Such an environment exposes employees to a large pool of diverse ideas, from which they can draw to combine with their own to generate new ideas that are often more novel than they could have by sitting alone (Tsai and Ghoshal, 1998). This leads to our first hypothesis:

*H1.* Exploratory innovation is positively related to employee creativity.

Exploitative innovation is a process of improving and updating the existing products and technology. Organizations engaged in improving current practice need first to gather information about the problems of the current practice. They then analyze the problems and search for solutions to solve them to achieve better performance by improving product lines or upgrading technologies. This problem-solving process can create opportunities for employees to search for new knowledge and produce new ideas (Hahn *et al.*, 2015). It is

similar to what [Lee et al. \(2007\)](#) found that the market response of current products – as a result of previous innovation action – feeds back into employee creativity by providing information that can imply the causal links between the innovation action and market outcomes. Such a problem-solving process is also a social process, which requires close collaboration with others. Therefore, similar to exploration, this process can also create an environment, wherein employees can learn from each other, thereby possibly becoming inspired to generate new ideas. Furthermore, as exploitative innovation often leads to immediate results ([March, 1991](#)), from which employees can learn and in turn improve their competency in problem solving. The employees' ever-improving competency can further boost their confidence and increase their intrinsic motivation to be more creative. This leads to our second hypothesis:

*H2.* Exploitative innovation is positively related to employee creativity.

### *2.3 Moderating effect of collectivism*

Chinese society is a typical collectivistic culture ([Oyserman et al., 2002](#)):

Collectivism is characterized by a tight social framework in which people can distinguish between in-groups and out-groups: they expect their in-group (relatives, clan, organizations) to look after them, and in exchange for that they feel they owe absolute loyalty to it ([Hofstede, 1980](#)).

Hence, collectivism emphasizes on conformity and harmony, even though sometimes it means self-sacrificing ([Kim, 2007](#)). Collectivists who see themselves as part of the collective tend to comply with collective norms, focus on collective interests, emphasize on team goals and strive to fulfill their respective obligations to achieve team goals ([Hong et al., 2016](#); [Triandis, 1995](#)). As a result, collectivistic individuals within teams are more reluctant to take the initiative to express their own views ([Hofstede, 2012](#)), especially when their views are contradictory with others in the team and have the potential to jeopardize team harmony.

The effect of collectivism on creativity in the literature is not decisive. Some scholars have found that people growing up in individualistic culture are more creative compared with those in collectivistic culture ([Saad et al., 2015](#); [Shane, 1992, 1993](#); [Goncalo and Staw, 2006](#)). However, others claim the effect is probably more context dependent. For example, [Černe et al. \(2013\)](#) found that individualism has a positive effect on creating inventions, whereas collectivism facilitates the commercialization of novel ideas. In this study, we do not intend to solve the debate, but rather examine how collectivism moderates the relationship between organizational innovation and employee creativity.

As discussed earlier, exploratory innovation can create a learning environment for employees to enhance their creativity, where individual employees can freely communicate and share ideas with each other. This mechanism works better when individuals are comfortable to express their views and opinions, even if they are different from those of others. In fact, the more diverse the views are, the more creative the ideas that employees can generate. Collectivistic culture emphasizes on obedience and conformity ([Hofstede, 1980](#); [Hofstede and bond, 1988](#)). People in collectivistic culture tend not to express views that are different from the others, as it might challenge the harmony of the team of which they are members ([Hong et al., 2016](#)). This mindset makes organizations subject to groupthink ([Janis, 1972](#)), thus impeding employee creativity. In this sense, collectivism dampens employees' learning: Collectivistic employees cannot develop their creativity by taking the full advantage of a stimulating and inspiring environment brought by organizational activities of exploratory innovation. On the contrary, when employees value individualism, they care

less about face-saving and collective harmony and feel more comfortable to be at odds with others and have the courage to express real feelings and opinions. Consequently, they are more able to capitalize on organization's exploratory innovation activities to develop their own creativity. Hence, we reach our third hypothesis:

*H3.* The collectivism tendency negatively moderates the relationship between exploratory innovation and employee creativity.

When it comes to exploitation, we believe that collectivism might serve a catalyst to enhance its effect on employee creativity. Exploitative innovation boosts employee creativity through a problem-solving process. Information about the problems of the existing products, practice and technology is gathered and distributed within organization to facilitate employees to search for solutions. The goal of this problem-solving process (i.e. improving the existing products or technology) is shared and more salient and more clearly defined than that of exploratory innovation, which is often as obscure as exploring new territories (He and Wong, 2004). In collectivistic culture, individuals tend to put collective goals above personal ones and are more committed to achieving collective goals to maintain their membership. In the same vein, collectivistic employees in organizations that perform exploitative innovation might be more committed to searching for new knowledge and solutions to show their loyalty to the organization than individualistic employees who might prefer pursuing their own interests. Collectivism therefore enhances learning of employees through organization's exploitative innovation, which in turn improves their creativity. This leads to our last hypothesis:

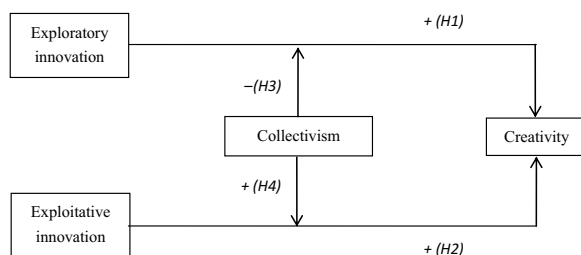
*H4.* The collectivism tendency positively moderates the relationship between exploitative innovation and employee creativity.

Overall, our theoretical model is shown in Figure 1. We argue that both exploratory and exploitative innovations are positively related to employee creativity. Collectivism moderates both relationships, but in different ways. It enhances the effect of exploratory innovation on employee creativity, but suppresses the effect of exploitative innovation.

### 3. Method

#### 3.1 Sample

We conducted a survey to test our hypotheses. We sent out 300 questionnaires in total to part-time MBA students at a university in central China, who work in various companies. To increase the response rate, the MBA students were asked to complete the questionnaire as their homework. The data collection consisted of two stages. In the first stage, questionnaires were handed out before class and the completed ones were collected after class. In the second stage, MBA students, most of whom are business managers, were



**Figure 1.**  
Theoretical model



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invited to distribute the questionnaires to their subordinates to complete to avoid common method bias. The data collection process lasted for one month. In total, 246 questionnaires were returned; 35 were excluded due to incomplete data, leaving 211 valid surveys; the effective rate is 85.77 per cent. The basic information of the respondents is shown in Table I. As shown in Table 1, the respondents 35 years old or younger account for 94.32 per cent of our sample, indicating that the sample mainly comprises young managers and employees. Moreover, most of the respondents are from firms with 100 or more employees (accounting for 76.66 per cent).

### 3.2 Measures

Our questionnaire contains established scales of creativity (13 items; Zhou and George, 2001), exploratory innovation (seven items), exploitative innovation (seven items; Jansen *et al.*, 2006) and collectivism (seven items, Van Hooft and De Jong, 2009), with each being

Name	Type	Number	(%)
Gender	Male	135	63.98
	Female	76	36.02
Industry	AFAF	17	8.06
	Manufacturing	88	41.71
	AC	4	1.90
	Finance	27	12.80
	ITCSS	31	14.69
	CRS	13	6.16
	LBS	10	4.74
	PASO	12	5.69
	Education	9	4.27
	CSE	5	2.37
Ownership	TSPS	9	4.27
	Private-owned	87	41.23
	State-owned	67	31.75
Age (years)	Foreign-funded	57	27.02
	18-22	15	7.1
	23-28	131	62.09
	29-35	53	25.12
Education	36 and above	12	5.69
	High school or less	16	7.58
	Junior college	29	13.74
	Undergraduate	140	66.35
	Master or above	26	12.32
Position	General staff	104	49.29
	First-line Manager	65	30.81
	Middle Manager	32	15.17
	senior manager	10	4.74
Employee size	Below 10	14	6.64
	10-100	35	16.59
	100-300	24	11.37
	300 and above	138	65.40

**Table I.**  
Descriptive statistics  
(N = 211)

**Notes:** AFAF: Agriculture, forestry, animal husbandry and fisheries; AC: Accommodation and Catering; ITCSS: Information transmission, computer services and software; CRS: Construction and real estate; LBS: Leasing and business services PASO: Public administration and social organizations; CSE: Culture, sports and entertainment; TSPS: Transportation, storage and postal services

measured on a five-point scale with 1 = strongly disagree and 5 = strongly agree. These scales were first translated into Chinese, with the aid of three renowned professors in the field of innovation research. Then the Chinese version was translated back into English and was compared with the original English version to ensure that the translation does not distort the original meaning. To facilitate respondents to understand the scales, we provided examples and vignettes.

To exclude plausible alternative explanations, we included in the questionnaires questions about respondents (gender, age, education background and formal position in their firms) and their organizations (the industry their firms belong to, the ownership of their firms and size of their firms in terms of number of employees).

### 3.3 Common method variance (CMV) tests

We conducted several tests to examine whether our study is subject to common method bias. First, we conducted Harman single factor analysis using SPSS21.0. Principal component analysis extracts eight factors, which explain 62.735 per cent of the total variance. The first factor explains only 31.537 per cent of the variance, below 50 per cent of the total variation. This suggests that no single factor can explain the most of the variance. Hence, common method bias is probably not a serious concern. Second, we use Amos 20 to conduct confirmatory factor analysis and find that the four-factor model is superior to the single-factor model and that the goodness of fit of the model is improved without CMV. This again implies that serious common method bias is not likely present in this study and our measures have a reasonably good discriminant validity. The results are shown in [Table II](#).

### 3.4 Reliability and validity test

We used SPSS21.0 to test the reliability and validity of our dependent and independent variables. The results are shown in [Table III](#). The Cronbach's alpha values of employee creativity, collectivism and exploratory/exploitative innovation are larger than 0.7 (column 2), which suggests good reliability of our key variables. Exploratory factor analysis is used to test their construct validity. The results show that all variables fulfill the requirements of Bartlett's test of sphericity and that the Kaiser–Meyer–Olkin (KMO) measures of sampling adequacy are all above 0.8 (column 3). Convergent validity was also examined. Factor-

Model	CMIN/DF	RMSEA	IFI	CFI
Four-factor model	2.022	0.07	0.841	0.839
One-factor model	3.524	0.11	0.601	0.597

**Table II.**  
Confirmatory factor  
analysis result

Variable	Cronbach's $\alpha$	KMO	AVE	Loading value
Employee creativity	0.912	0.915	0.4892	0.50-0.805
Collectivism	0.771	0.839	0.4266	0.50-0.748
Exploratory innovation	0.860	0.863	0.6037	0.63-0.866
Exploitative innovation	0.871	0.865	0.5680	0.67-0.798

**Table III.**  
Reliability and  
validity of variables

**Note:** AVE: average variance extracted value

loading values of all items are above 0.5 (column 5) and AVE of each variable is greater than 0.4 (column 4), indicating that the convergent validity is acceptable.

**4. Results**

Table IV shows the descriptive statistics and the correlation matrix of the main variables in our study. Our hypotheses were tested using hierarchical regression. The variance inflation factor (VIF) of variables is between 1 and 3, indicating that the problem of multicollinearity is not probable. The results are shown in Tables V and VI.

Table V reports the regression results with exploratory innovation as the main explanatory variable. In Model 1, we include only control variables. Most of them are not

**Table IV.**  
Descriptive statistics and correlation matrix ( $N = 211$ )

Variables	1	2	3	4
1. Collectivism	–			
2. Exploratory innovation	0.266***	–		
3. Exploitative innovation	0.319***	0.462***	–	
4. Employee creativity	0.434***	0.451***	0.536***	–
Mean	3.596	3.433	3.587	3.679
SD	0.605	0.762	0.720	0.614

Notes: \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

**Table V.**  
Hierarchical regression results (independent variable: exploratory innovation)

Variables	Model 1	Model 2	Model 3	Model 4
Gender (female)	0.217* (0.263)	0.115 (0.237)	0.043 (0.224)	0.045 (0.224)
Age1 (18-22)	-0.182 (0.464)	-0.214** (0.415)	-0.213*** (0.390)	-0.184* (0.394)
Age2 (23-28)	-0.096 (0.352)	-0.143 (0.315)	-0.142 (0.296)	-0.104 (0.299)
Age3 (29-35)	-0.168 (0.326)	-0.104 (0.292)	-0.102 (0.274)	-0.079 (0.275)
Edu1 (High school or less)	0.098 (0.434)	0.047 (0.389)	0.040 (0.366)	0.025 (0.366)
Edu2 (Junior college)	0.201 (0.362)	0.138 (0.324)	0.057 (0.308)	0.049 (0.307)
Edu3 (Undergraduate)	0.129 (0.261)	0.057 (0.234)	0.044 (0.220)	0.033 (0.220)
Industry (Service)[4]	0.061 (0.16)	0.027 (0.143)	0.006 (0.134)	0.011 (0.134)
Ownership (Private-owned)	-0.138 (0.188)	-0.097 (0.168)	-0.064 (0.159)	-0.063 (0.158)
Ownership (State-owned)	-0.054 (0.203)	0.033 (0.184)	0.033 (0.173)	0.026 (0.172)
Position1 (General staff)	-0.121 (0.368)	0.001 (0.331)	-0.174 (0.318)	-0.150 (0.318)
Position2 (First-line manager)	-0.078 (0.375)	0.001 (0.336)	-0.166 (0.323)	-0.134 (0.324)
Position3 (Middle manager)	-0.100 (0.384)	-0.039 (0.344)	-0.114 (0.326)	-0.082 (0.329)
Employee size1 (Below 10)	-0.016 (0.324)	-0.020 (0.29)	-0.030 (0.273)	-0.031 (0.271)
Employee size2 (10-100)	0.067 (0.203)	0.059 (0.182)	0.031 (0.171)	0.029 (0.171)
Employee size3 (100-300)	0.013 (0.233)	-0.024 (0.064)	-0.014 (0.196)	-0.008 (0.196)
Exploratory innovation		0.453*** (0.064)	0.362*** (0.063)	0.368*** (0.063)
Collectivism			0.331*** (0.064)	0.322*** (0.064)
Exploratory innovation × Collectivism				-0.098* (0.050)
$R^2$	0.077	0.266	0.356	0.365
Adjusted $R^2$	0.001	0.201	0.296	0.301
$F$	1.011	4.111***	5.895***	5.767***
$\Delta F$	1.011	49.661***	26.862***	2.589*
$\Delta R^2$	0.077	0.189	0.090	0.009

Notes: \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ , standard errors are in parentheses

Variables	Model 1	Model 5	Model 6	Model 7	Collectivism in Chinese context
Gender (female)	0.217* (0.263)	0.037 (0.225)	-0.012 (0.215)	0.014 (0.214)	
Age1 (18-22)	-0.182 (0.464)	-0.171* (0.390)	-0.177* (0.371)	-0.151 (0.370)	
Age2 (23-28)	-0.096 (0.352)	-0.067 (0.296)	-0.079 (0.282)	-0.042 (0.281)	
Age3 (29-35)	-0.168 (0.326)	-0.003 (0.277)	-0.018 (0.264)	-0.025 (0.261)	
Edu1 (High school or less)	0.098 (0.434)	0.066 (0.365)	0.056 (0.348)	0.044 (0.345)	
Edu2 (Junior college)	0.201 (0.362)	0.101 (0.306)	0.037 (0.294)	0.021 (0.292)	
Edu3 (Undergraduate)	0.129 (0.261)	-0.025 (0.222)	-0.024 (0.212)	-0.031 (0.210)	
Industry (Service)	0.061 (0.160)	0.040 (0.134)	0.020 (0.128)	0.015 (0.127)	
Ownership (Private-owned)	-0.138 (0.188)	-0.149* (0.158)	-0.112 (0.151)	-0.117 (0.150)	
Ownership (State-owned)	-0.054 (0.203)	-0.036 (0.171)	-0.023 (0.163)	-0.029 (0.161)	
Position1 (General staff)	-0.121 (0.368)	-0.042 (0.309)	-0.184 (0.310)	-0.185 (0.298)	
Position2 (First-line manager)	-0.078 (0.375)	-0.022 (0.315)	-0.160 (0.307)	-0.159 (0.304)	
Position3 (Middle manager)	-0.100 (0.384)	-0.012 (0.324)	-0.081 (0.311)	-0.065 (0.309)	
Employee size1 (Below 10)	-0.016 (0.324)	-0.037 (0.273)	-0.042 (0.260)	-0.051 (0.258)	
Employee size2 (10 -100)	0.067 (0.203)	0.121* (0.171)	0.086 (0.164)	0.079 (0.163)	
Employee size3 (100-300)	0.013 (0.233)	0.007 (0.195)	0.010 (0.186)	0.018 (0.185)	
Exploitative innovation		0.556*** (0.061)	0.464*** (0.062)	0.445*** (0.062)	
Collectivism			0.283*** (0.062)	0.263** (0.062)	
Exploitative innovation × Collectivism				-0.130** (0.044)	
$R^2$	0.077	0.352	0.416	0.430	
Adjusted $R^2$	0.001	0.295	0.361	0.373	
$F$	1.011	6.159***	7.583***	7.585***	
$\Delta F$	1.011	81.793***	20.965***	4.870**	
$\Delta R^2$	0.077	0.275	0.064	0.015	

**Notes:** \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ ; standard errors are in parentheses

**Table VI.**  
Hierarchical regression results (independent variable: exploitative innovation)

significant, except for age. The negative coefficients of age between 18 and 22 indicate that employees with this age are less creative than those older than 36 (i.e. the reference group). It is probably because the older employees have accumulated more experiences and knowledge, which can be drawn on to generate more creative ideas.

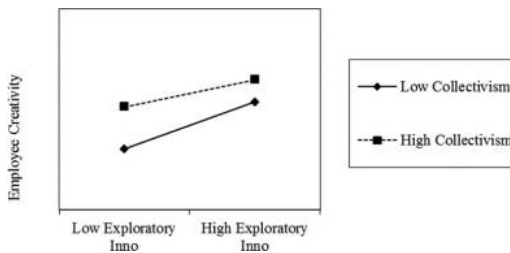
In Models 2 to 4, we include exploratory innovation, collectivism and their interaction in an accumulative way. Exploratory innovation is first added in Model 2, and it is positively related to employee creativity ( $\beta = 0.453, p < 0.001$ ). This result persists across Models 2 to 4, therefore supporting *H1*. In Model 3, we add collectivism. Its effect is positive, which suggests that collectivism enhances employee creativity. This is seemingly surprising, as much of prior research showed the negative effects of collectivism on creativity, due to which it promotes obedience and conformity. However, some recent studies have indicated that creativity is a multi-faceted concept and collectivism can enhance certain aspects of creativity and undermine others (Černe *et al.*, 2013; Erez and Nouri, 2010). For example, Erez and Nouri (2010) defined creativity as a concept that encompasses two aspects – novelty and usefulness. They argued that individuals in individualistic cultures demonstrate higher level of originality and novelty in idea generation, whereas those in collectivistic cultures generate ideas that are more useful and appropriate. It is because useful ideas, instead of novel ideas, can help people be accepted by others and social norms more easily. Considering the scale of creativity adopted from Zhou and George (2001), we find that it seems to capture more of the usefulness aspect of creativity, which might explain the positive coefficient of collectivism. Finally, we include the interaction term between exploratory innovation and collectivism in Model 4. As predicted, collectivism negatively

moderates the relationship between exploratory innovation and employee creativity, even though it is just moderately significant ( $\beta = -0.098, p < 0.1$ ), providing limited evidence to support *H3*.

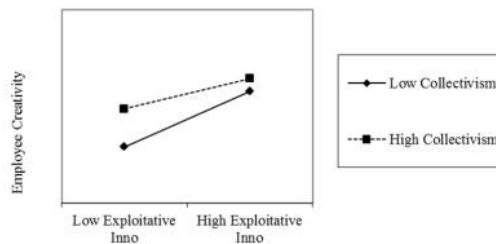
Table VI presents the results of hierarchical regression with exploitative innovation as the independent variable. We repeat Model 1 in Table V for easy comparison. In Model 5, we introduce exploitative innovation. It has a significantly positive effect on employee creativity ( $\beta = 0.556, p < 0.001$ ) and remains highly significant in Models 6 and 7, consistent with the effect hypothesized in *H2*. In Model 6, we introduce collectivism, which is positively related to employee creativity. In Model 7, we add the interaction term between exploitative innovation and collectivism. Contrary to our hypothesis, the effect of the interaction is negative ( $\beta = -0.130, p < 0.05$ ), failing to support our *H4*. This result suggests that collectivism negatively moderates the relationship between exploitative innovation and employee creativity. It seems that even though organization's exploitative innovation activity can motivate collectivistic employees to commit to improving the existing practice (to be accepted and show their loyalty), a certain degree of conflict and disharmony is still needed in this process to enhance employee creativity. The process from collecting information regarding the current practice, to developing solutions to improve the current practice is often not a straightforward one, but rather a complex one fraught with intense discussion and debate. Unfortunately, collectivistic employees are less likely to engage in such activities. With a sense of inability to challenge and disagreement to others' views, the employees would not be able to take advantage of the stimulating environment to develop their creativity.

Figures 2 and 3 show the moderating effects of collectivism on the relationships between the two types of organizational innovation and employee creativity. Both figures show that organizational innovation – both exploratory and exploitative – can enhance creativity of the employees who are less collectivistic than those who are more collectivistic. Therefore, our findings support *H3*, but fail to support *H4*.

**Figure 2.**  
Moderation of collectivism in the relation between exploratory innovation and creativity



**Figure 3.**  
Moderation of collectivism in the relation between exploitative innovation and creativity



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We also conducted an additional analysis to check the robustness of our findings (results are available upon request). When we put both exploratory and exploitative innovation as well as their interactions with collectivism in the same model, we obtained similar results. However, the effect of exploratory innovation on employee creativity was weaker than exploitative innovation. It implies that employee creativity can be better nurtured in a stimulating environment with more clearly defined direction than in an environment without any restraints or limits. Moreover, collectivism weakens the effect of exploitative innovation compared to exploratory innovation. Collectivism weakens the effect of innovation because collectivistic employees cannot take full advantage of the learning environment resulting from organizational innovation. However, exploratory innovation does provide not only a learning environment, but also a sense of security for employees to take risk, regardless of their degrees of collectivism. This might lead to a weaker moderating effect of collectivism.

## 5. Discussion

This study explores the influence of two types of organizational innovation on employee creativity and further investigates the moderating effects of collectivism on the innovation–creativity relationship. We find that both types of organizational innovation can enhance employee creativity. Even though our research design does not allow us to make any conclusion on the causal link between the two, our empirical findings are consistent with our theoretical model, which is developed based on the causal arguments that how the two types of organizational innovation can nurture employee creativity. This finding therefore provides preliminary support to a model of innovation–creativity cycle (Paulus, 2002; Lee *et al.*, 2007).

We also find that the innovation–creativity relationship is culturally bound. Collectivism negatively moderates the effects of both exploratory and exploitative innovation on employee creativity, suggesting that collectivism can dampen the stimulating effects of organizational innovation on employee creativity. This finding is interesting, especially when considered along with the positive main effect of collectivism. Collectivism might enhance employee creativity by motivating them to focus on the usefulness and appropriateness of their ideas (Erez and Nouri, 2010) so that they can avoid conflict as much as possible and be accepted in a harmonious community. Organizational innovation, on the other hand, enhances employee creativity by creating a stimulating environment wherein employees can challenge, inspire and learn from each other, thereby facilitating them to generate novel ideas. This requires that individuals tolerate certain degree of conflict. Both can help develop employee creativity, but through different mechanisms; and unfortunately, they are not compatible and cancel out each other's effects. Hence, combining organizational innovation with collectivistic cultures to promote employee creativity does not seem to be good.

Furthermore, the negative moderating effect of collectivism in this study is also interesting, if the negative and positive moderating effects are juxtaposed between creativity and innovation, as found in Sarooghi *et al.* (2015). It means that combining collectivism and creativity can enhance innovation, but combining collectivism and innovation can weaken creativity. This suggests that the mechanism through which creativity enhances innovation is different from that by which innovation boosts creativity, thereby indirectly supporting the creativity–innovation cycle.

### 5.1 Theoretical implications

Our study contributes to the extant literature in several ways. First, we propose a theoretical model that describes how two types of innovation activities of organizations, i.e. exploratory

and exploitative innovation, can enhance employee creativity. Our empirical findings are consistent with our model. This deepens our understanding of the relationship between innovation and creativity in three aspects. First, our study complements the prior research that found creativity can lead to innovation (Amabile, 2004; Sarooghi *et al.*, 2015) by empirically completing the creativity–innovation cycle, which has been speculated by a few scholars recently (Paulus, 2002; Lee *et al.*, 2007). Second, our study also helps us understand how the relationship between innovation and creativity can work across different levels. Third, our study distinguishes two types of organizational innovation and proposes different mechanisms through which they can foster employee creativity, as supported by our empirical analysis.

Second, this study complements prior research that examines the effect of organizational contexts on employee innovation (Amabile, 1988, 1998; Hahn *et al.*, 2015; Madjar *et al.*, 2002; Oldham and Cummings, 1996) by considering an additional organizational contextual factor – organization’s innovation activities, which has been well explored. We argue that exploratory innovation activities of organizations exert profound influence on organization’s internal environment. They create a stimulating and trusting learning environment wherein employees can intensely challenge and debate with each other, brainstorm and toss ideas around and feel secure to take a risk to explore novel ideas. Such an environment is conducive to creativity. Our empirical findings support this argument. The characteristics of exploitative innovation (such as predictive, immediate, and positive) can provide employees with the confidence to involve in innovation and inspire their creativity.

Third, we examined the moderating effect of collectivism on the relationship between organizational innovation and employee creativity. We find that collectivism negatively interacts with the organizational innovation to affect employee creativity, despite its main effect being positive. Our findings might reveal a much more complex effect of collectivism on employee creativity. We have provided a speculative explanation for the seemingly contradictory results earlier in this section, which should be tested in future research.

### *5.2 Practical implications*

Our study has a few practical implications in terms of how organizations, especially Chinese organizations, can enhance employee creativity. Our findings suggest a new approach for enhancing employee creativity in an organizational context. Typical school education in China does not provide a friendly environment to develop creativity. Creativity by nature means different from others; however, the Chinese school education emphasizes on homogeneity and disciplines to serve the interests of collectives (e.g. class, school) by suppressing individualities. Furthermore, because of the test-centered system of selecting and stratifying students, learning is very much focused on the textbook knowledge covered in important exams and test-taking skills. Under the pressure of entering top schools, students strive to perform as much as possible in exams and hardly have time and energy to explore other areas of knowledge of their interests, which can potentially hurt their creativity development. Our findings suggest that working in an innovative organization might mitigate the suppressing effects of the Chinese school education on creativity. In such an organization, employees can be immersed in a vibrant learning environment where they are exposed to different ideas and can feel secure to explore without worrying about the consequences of failures. Therefore, it is important for organizations to engage in innovational activities, either exploratory or exploitative or both, as long as resources allow. This not only can benefit organizational performance, but also can nurture employee creativity.

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However, our study also suggests that while engaging in innovation, organizations need to be cautious about the negative moderating effect of collectivism, which is a strong culture value in China. Our findings suggest that individuals who value collectivism are less likely to be able to take full advantage of the learning environment offered in an innovative organization. It can be due to their hesitation of speaking up and confronting with others. To reduce this effect, managers can deliberately build and maintain an organizational culture, which values nonconformity, free communication and cognitive conflict (i.e. conflict about issues, but not affective conflict about persons), such that employees can be less constrained by their cultural values at least in workplace. Moreover, managers can also adopt a few techniques to facilitate idea sharing. For example, they can form smaller project teams or discussion groups, as people tend to feel less peer pressure in smaller groups; alternatively, they can also ask employees to take turn to play the devil's advocate in team meetings.

Finally, we would like to point out that being cautious about the negative effect of collectivism on employee creativity does not justify the practice of screening out prospective employees who value collectivism during the hiring process. Although we do not hypothesize the main effect of collectivism, our empirical analysis shows that the main effect of collectivism on creativity is positive. Given this finding, we are hesitant to reach a quick conclusion that collectivism hinders creativity, even though some prior research claimed so. According to [Erez and Nouri \(2010\)](#), we suspect that creativity is a multi-faceted concept; while collectivism might hinder the generation of novel ideas, it can promote the usefulness of new ideas. In this sense, both collectivism and organizational innovation activities can contribute to the development of employee creativity, but unfortunately in incompatible ways and hence the negative interaction effect we observed. This means that collectivistic employees can also be creative; it is a matter of how to release and utilize their creativity potential.

### 5.3 Limitations

Our study is not without limitations. First, the cross-sectional design does not allow us to test the causality and dynamics between organizational innovation and creativity. However, our study does suggest a causal links from organizational innovation to employee creativity, as our results are consistent with the theoretical model developed based on causal arguments. Future research can collect longitudinal data (e.g. panel data) and build dynamic models to examine the causal links between the two. Second, the small sample size does not allow us to do more fine-grained analysis, due to restraints in surveyed organizations and funding difficulties. Future research can compare the relationship between organizational innovation and employee creativity across different industries and regions in China. Third, our measurement of creativity does not allow us to reconcile the contradictory main effects of collectivism found in prior research and ours. Even though this is out of the scope of this study, future research must be directed towards developing a more comprehensive measurement of creativity to tease out the effect of collectivism on different aspects of creativity. Finally, we only examine one dimension of culture, i.e. collectivism, in this study. Culture is a complex social phenomenon and the result based on one single cultural dimension might be very limited for us to get a complete picture of how culture, as a whole, affects creativity. This study can be considered as an initial effort to explore how Chinese culture shapes the relationship between innovation and creativity. Future research can measure all five [Hofstede's \(1980\)](#) cultural dimensions and Confucianism dimensions and examine their effects on this relationship, separately and collectively.



## 6. Conclusion

China has developed drastically since 1978 when it started the economic reform. In the past few decades, it has made great accomplishments and has gradually transformed from being a world factory that provides cheap labor into one of the most innovative countries with rapid technological advancement. The development of innovation cannot be achieved without creativity. In this study, we aim to answer the question:

Q1. How to develop and nurture creative talents in China?

Particularly, we examine how organizational innovation can influence employee creativity in the Chinese context. We argue that organizational innovation can create an environment from which employees can benefit to develop their creativity; however, those who value collectivism might not be able to take full advantage of it. Our findings are consistent with this theoretical model. While this study contributes to the understanding of the relationship among organizational innovation, culture and creativity, it also raises more questions that we hope future research can address.

## Notes

1. Data from World Bank.
2. The Global Innovation Index is co-published by Cornell University, INSEAD and the World Intellectual Property Organization (WIPO), which aims to “capture the multi-dimensional facets of innovation and provide the tools that can assist in tailoring policies to promote long-term output growth, improved productivity and job growth”. It is an index that contains 81 sub-indicators exploring a wide range of aspects of a country’s innovation capability and results, including political environment, education, infrastructure, and business sophistication, among others.
3. Data from [www.globalinnovationindex.org/analysis-indicator](http://www.globalinnovationindex.org/analysis-indicator)
4. AFAF, Manufacturing and CRS are classified as production and manufacturing industries and the other industries are classified as a service industry.

## References

- Amabile, T.M. (1988), “A model of creativity and innovation in organizations”, *Research in Organizational Behavior*, Vol. 10 No. 1, pp. 123-167.
- Amabile, T.M. (1996), *Creativity in Context: Update to the Social Psychology of Creativity*, Westview, Boulder, CO.
- Amabile, T.M. (1998), “How to kill creativity”, *Harvard Business Review*, Vol. 76 No. 5, pp. 168-169.
- Amabile, T.M. (2004), “Innovation & creativity quotes”, available at: [www.innovationtools.com/Quotes/Quotes.asp](http://www.innovationtools.com/Quotes/Quotes.asp) (accessed 27 July 2004)
- Amabile, T.M., Conti, R., Coon, H., Lazenby, J. and Herron, M. (1996), “Assessing the work environment for creativity”, *Academy of Management Journal*, Vol. 39 No. 5, pp. 1154-1184.
- Anderson, N.R. and King, N. (1993), “Innovation in organizations”, in Cooper, C.L. and Robertson, I.T. (Eds), *International Review of Industrial and Organizational Psychology*, Vol. 8, Wiley, Hoboken, NJ, pp. 1-34.
- Anderson, N., Potocnik, K. and Zhou, J. (2014), “Innovation and creativity in organizations a state-of-the-science review, prospective commentary, and guiding framework”, *Journal of Management*, Vol. 40 No. 5, pp. 1297-1333.

- Benner, M.J. and Tushman, M.L. (2003), "Exploitation, exploration, and process management: the productivity dilemma revisited", *Academy of Management Review*, Vol. 28 No. 2, pp. 238-256.
- Boeddrich, H.J. (2004), "Ideas in the workplace: a new approach towards organizing the fuzzy front end of the innovation process", *Creativity and Innovation Management*, Vol. 13 No. 4, pp. 274-285.
- Černe, M., Jaklič, M. and Škerlavaj, M. (2013), "Decoupling management and technological innovations: resolving the individualism–collectivism controversy", *Journal of International Management*, Vol. 19 No. 2, pp. 103-117.
- Cheng, H., Niu, M.S. and Niu, K.H. (2014), "Industrial cluster involvement, organizational learning, and organizational adaptation: an exploratory study in high technology industrial districts", *Journal of Knowledge Management*, Vol. 18 No. 5, pp. 971-990.
- Devanna, M.A. and Tichy, N. (1990), "Creating the competitive organization of the 21st century: the boundaryless corporation", *Human Resource Management*, Vol. 29 No. 4, pp. 455-471.
- Eisenberg, J. (1999), "How individualism–collectivism moderates the effects of rewards on creativity and innovation: a comparative review of practices in japan and the US", *Creativity & Innovation Management*, Vol. 8 No. 4, pp. 251-261.
- Erez, M. and Nouri, R. (2010), "Creativity: the influence of cultural, social and work contexts", *Management and Organization Review*, Vol. 6 No. 3, pp. 351-370.
- Gagné, M. and Deci, E.L. (2005), "Self-determination theory and work motivation", *Journal of Organizational Behavior*, Vol. 26 No. 4, pp. 331-362.
- Goncalo, J.A. and Staw, B.M. (2006), "Individualism–collectivism and group creativity", *Organizational Behavior & Human Decision Processes*, Vol. 100 No. 1, pp. 96-109.
- Goncalo, J.A. and Duguid, M.M. (2012), "Follow the crowd in a new direction: when conformity pressure facilitates group creativity (and when it does not)", *Organizational Behavior and Human Decision Processes*, Vol. 118 No. 1, pp. 14-23.
- Gong, Y., Huang, J.C. and Farh, J.L. (2009), "Employee learning orientation, transformational leadership, and employee creativity: the mediating role of employee creative self-efficacy", *Academy of Management Journal*, Vol. 52 No. 4, pp. 765-778.
- Gough, H.G. (1979), "A creative personality scale for the adjective check list", *Journal of Personality and Social Psychology*, Vol. 37 No. 8, pp. 1398-1405.
- Greve, H.R. (2007), "Exploration and exploitation in product innovation", *Industrial & Corporate Change*, Vol. 16 No. 5, pp. 945-975.
- Gupta, A.K. and Shalley, C.E. (2006), "The interplay between exploration and exploitation", *Academy of Management Journal*, Vol. 49 No. 4, pp. 693-706.
- Hahn, M.H., Lee, K.C. and Lee, D.S. (2015), "Network structure, organizational learning culture, and employee creativity in system integration companies", *Computers in Human Behavior*, Vol. 42, pp. 167-175.
- He, Z.L. and Wong, P.K. (2004), "Exploration vs. exploitation: an empirical test of the ambidexterity hypothesis", *Organization Science*, Vol. 15 No. 4, pp. 481-494.
- Hofstede, G. (1980), *Culture's Consequences: National Differences in Thinking and Organizing*, Sage, Beverly Hills, CA.
- Hofstede, B.G. (2012), *Cultures and Organizations*, Software of the Mind McGraw-Hill, Geert Hofstede.
- Hofstede, G. and Bond, M.H. (1988), "The Confucius connection: from cultural roots to economic growth", *Organizational Dynamics*, Vol. 16 No. 4, pp. 5-21.
- Hong, J., Yang, Y. and Song, G. (2016), "A theory of creative expressiveness: empirical studies in Chinese universities", *Chinese Management Studies*, Vol. 10 No. 2, pp. 387-404.
- Hu, A. and Jefferson, G.H. (2009), "A great wall of patents: what is behind china's recent patent explosion?", *Journal of Development Economics*, Vol. 90 No. 1, pp. 57-68.

- Hwang, G.H., Lee, K.C. and Seo, Y.W. (2017), "How does six sigma influence creativity and corporate performance through exploration and exploitation?", *Total Quality Management & Business Excellence*, (Forthcoming), pp. 1-17.
- Janis, I.L. (1972), *Victims of Groupthink: A Psychological Study of Foreign-Policy Decisions and Fiascoes*, Houghton Mifflin, Oxford.
- Jansen, J.P.J.P., Van Den Bosch, D.B.F.A.J. and Volberda, H.W. (2006), "Exploratory innovation, exploitative innovation, and performance: effects of organizational antecedents and environmental moderators", *Erim Report Management Science*, Vol. 52 No. 11, pp. 1661-1674.
- Kasof, J., Chen, C., Himsel, A. and Greenberger, E. (2007), "Values and creativity", *Creativity Research Journal*, Vol. 19 Nos 2/3, pp. 105-122.
- Katz, R. and Allen, T.J. (1988), "Project performance and locus of influence in the R&D matrix", in Katz, R. (Ed.), *Managing Professionals in Innovative Organizations, a Collection of Readings*, Ballinger, Cambridge, MA, pp. 469-484.
- Kim, K.H. (2007), "Exploring the interactions between Asian culture (Confucianism) and creativity", *The Journal of Creative Behavior*, Vol. 41 No. 1, pp. 28-53.
- Lee, K., Rho, S., Kim, S. and Jun, G.J. (2007), "Creativity-innovation cycle for organisational exploration and exploitation: lessons from Neowiz-a Korean internet company", *Long Range Planning*, Vol. 40 Nos 4/5, pp. 505-523.
- Levinthal, D.A. and March, J.G. (1993), "The myopia of learning", *Strategic Management Journal*, Vol. 14 No. 2, pp. 95-112.
- Li, X. (2012), "Behind the recent surge of Chinese patenting: an institutional view", *Research Policy*, Vol. 41 No. 1, pp. 236-249.
- Madjar, N., Oldham, G.R. and Pratt, M.G. (2002), "There's no place like home? The contributions of work and nonwork creativity support to employees' creative performance", *Academy of Management Journal*, Vol. 45 No. 4, pp. 757-767.
- March, J.G. (1991), "Exploration and exploitation in organizational learning", *Organization Science*, Vol. 2 No. 1, pp. 71-87.
- Oldham, G.R. and Cummings, A. (1996), "Employee creativity: personal and contextual factors at work", *Academy of Management Journal*, Vol. 39 No. 3, pp. 607-634.
- Oyserman, D., Coon, H.M. and Klemmeier, M. (2002), "Rethinking individualism and collectivism: evaluation of theoretical assumptions and Meta-analyses", *Psychological Bulletin*, Vol. 128 No. 1, pp. 3-72.
- Paulus, P.B. (2002), "Different ponds for different fish: a contrasting perspective on team innovation", *Applied Psychology*, Vol. 51 No. 3, pp. 394-399.
- Rank, J., Pace, V.L. and Frese, M. (2004), "Three avenues for future research on creativity, innovation, and initiative", *Applied Psychology*, Vol. 53 No. 4, pp. 518-528.
- Saad, G., Cleveland, M. and Ho, L. (2015), "Individualism-collectivism and the quantity versus quality dimensions of individual and group creative performance", *Journal of Business Research*, Vol. 68 No. 3, pp. 578-586.
- Sarooghi, H., Libaers, D. and Burkemper, A. (2015), "Examining the relationship between creativity and innovation: a meta-analysis of organizational, cultural, and environmental factors", *Journal of Business Venturing*, Vol. 30 No. 5, pp. 714-731.
- Shane, S.A. (1992), "Why do some societies invent more than others?", *Journal of Business Venturing*, Vol. 7 No. 1, pp. 29-46.
- Shane, S. (1993), "Cultural influences on national rates of innovation", *Journal of Business Venturing*, Vol. 8 No. 1, pp. 59-73.
- Squalli, J. and Wilson, K. (2014), "Intelligence, creativity, and innovation", *Intelligence*, Vol. 46, pp. 250-257.

- Triandis, H.C. (1994), *Culture and Social Behavior*, McGraw-Hill, New York, NY.
- Triandis, H.C. (1995), *Individualism & Collectivism*, Westview press, Boulder.
- Tsai, W. and Ghoshal, S. (1998), "Social Capital and value creation: the role of intrafirm networks", *Academy of Management Journal*, Vol. 41 No. 4, pp. 464-476.
- Valaei, N., Rezaei, S. and Ismail, W.K.W. (2017), "Examining learning strategies, creativity, and innovation at SMEs using fuzzy set qualitative comparative analysis and PLS path modeling", *Journal of Business Research*, Vol. 70, pp. 224-233.
- Van Hooft, E.A. and De Jong, M. (2009), "Predicting job seeking for temporary employment using the theory of planned behaviour: the moderating role of individualism and collectivism", *Journal of Occupational and Organizational Psychology*, Vol. 82 No. 2, pp. 295-316.
- Westwood, R. and Low, D.R. (2003), "The multicultural muse culture, creativity and innovation", *International Journal of Cross Cultural Management*, Vol. 3 No. 2, pp. 235-259.
- Yoshida, D.T., Sendjaya, S., Hirst, G. and Cooper, B. (2014), "Does servant leadership foster creativity and innovation? A multi-level mediation study of identification and prototypicality", *Journal of Business Research*, Vol. 67 No. 7, pp. 1395-1404.
- Zahra, S.A. and George, G. (2002), "Absorptive capacity: a review, reconceptualization, and extension", *Academy of Management Review*, Vol. 27 No. 2, pp. 185-203.
- Zhang, J., Ebbens, H. and Mulder, R. (2012), "Competitiveness of Chinese industries-a comparison with the EU", *Review of European Studies*, Vol. 4 No. 1, pp. 203-219.
- Zhang, X. and Bartol, K.M. (2010), "Linking empowering leadership and employee creativity: the influence of psychological empowerment, intrinsic motivation, and creative process engagement", *Academy of Management Journal*, Vol. 53 No. 1, pp. 107-128.
- Zhou, J. and George, J.M. (2001), "When job dissatisfaction leads to creativity: encouraging the expression of voice", *Academy of Management Journal*, Vol. 44 No. 4, pp. 682-696.

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