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Research on Mechanism of Innovation Climate in College on College Student's Innovative Behavior

The Mediating Effects of Intrinsic Incentives

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***Abstract*—Innovation climate in college has positive impact on college student's innovative behavior, but the existing study has not revealed action mechanism between them effectively. Considering that college student's innovative behavior is non-profit oriented , the study introduced intrinsic incentives as a mediating variable based on field theory and perception evaluation theory, to test the relationship between different dimensions of innovation climate in college and college student's innovative behavior. Based on the statistical analysis of sample projects, the findings showed that: support from college and support of teachers have positive effect on the student's innovative behavior, and support from college is lack of correlation with college student's innovative behavior. In addition, intrinsic motivation plays a partial mediating role between support from college and college student's innovative behavior, and it plays fully mediating role between support from teachers and college student's innovative behavior.**

Keywords—innovation climate in college; intrinsic incentives; college student's innovative behavior; field theory; perception evaluation theory

I. INTRODUCTION

Cultivation of innovative talents in colleges has become an important part of innovation-oriented national construction. Continuously delivery of innovative talents has become one of the aims of higher education. In recent years, domestic colleges carry out innovation education and the construction of innovation teams, in order to arouse college students' enthusiasm in innovation. Benign innovation climate has been created to stimulate their innovative behavior. Currently, the catalysis of innovation climate on innovative behavior under the perspective of field dynamic theory has been approved and proved by scholars. Scott and Bruce have proved leadership style, ways of solving personal problems and organization relationship in innovation climate can explains amount of variability of personal innovative behavior at 37% level [1]. Research of Gilson and Shalley indicates innovation climate builds recessive information exchange platform for members in organization and forms knowledge sharing mechanism and knowledge fermentation process, in order to stimulate members' innovative behaviors. [2]

This research introduces intrinsic incentives to explain the mechanism that innovation climate influences college students' innovative behavior, and provide theoretical supplement for research on the relationship between innovation climate and innovative behavior. First, discuss mainstream research and results about innovation climate, intrinsic incentives and innovative behavior, establish theoretical frame to describe the relationship among the three and propose research hypothesis; second, verify the relationship between innovation climate and college students' innovative behavior through questionnaire survey and survey the mediating effect of intrinsic incentives between innovation climate and college students' innovative behavior; third, propose corresponding enlightenment on teaching and research prospect.

II. RELEVANT RESEARCH REVIEWS

A. Innovation Climate in Colleges and College Students' Innovative Behavior

Innovation climate is expected information and explicit signal, conveying the expectation of organization for innovation activity and potential innovation results, with the carrier of individual understanding, embodying resources and support provided by the organization for innovation [3]. Generally speaking, innovation climate is people's subjective feeling and the cognition of organization members for sharing of innovation environment related to organizational policy, practice and procedure, as well as people's perception of supporting innovation in organization environment [4][5]. Innovation climate in colleges is college students' feeling of external support acquired in learning environment, including supports from school, teachers and schoolmates.

Scott and Bruce define college students' innovative behavior as the process that individuals seek support of innovation thinking through constructing problem solving idea and use innovation methods to realize innovative conception. Obviously, college students' innovative behavior is influenced by innovation climate. Just as Amabile says, innovation climate can stimulate people's creative behavior [6]. Popularization of innovation education idea in colleges and the establishment of innovative psychological atmosphere and public opinion environment actuate the

formation and development of college students' innovation activity.

B. Intrinsic Incentives and College Students' Innovative Behavior

Intrinsic incentive is opposite to extrinsic incentive. The excitation source comes from tasks instead of benefits produced from work. It shows people's state of psychological satisfaction because of interests and enthusiasm for work [7]. Research based on emotional theory indicates, when people receive intrinsic incentive, they will have good psychological experience, absorb more extensive knowledge through expanding the scope of securable information source, and stimulate innovation inspiration and measures [8]. Zhang and Bartol explain the relationship between intrinsic incentive and innovative behavior, when people concentrate on solving problems and innovation, they will feel satisfied about the pursuit of innovation and then willingly seek innovative answers [9]. Research on self-decision theory shows intrinsic incentives improve cognitive flexibility and risk tolerance of people through increasing psychological supplement of positive energy in order to actuate people's innovative behavior. Gagne and Deci verify the probability of proposing innovation schemes is positively correlated to people's excitement feeling produced because of task complexity and risk [10].

C. Innovation Climate and Intrinsic Incentive

In cognitive evaluation theory, external environment conveys information and controls power and influences individuals' intrinsic motivation [11]. Innovation climate actuates resources of intrinsic incentives. Innovation climate produces mapping for intrinsic incentive in the function of transmission effect, and forms ultimate transcendental transmission effects of innovative behavior. For example, when teachers and students form high quality exchange relation, teachers' concern and support for innovation will enhance students' sense of trust and comfort, which become internal motivation of students' spontaneous innovation [12]. Teachers will provide more innovation opportunities for students to stimulate their innovation potential, make them courageous to take risks and alleviate their pressure from failure in innovation [13].

Furthermore, no matter whether administrators create innovation climate, cohesiveness or discreteness in interaction of team members will strengthen or weaken the influence of innovation climate [14]. In social support theory, interpersonal interaction and information exchange will avail innovative behavior of members [15]. The supportive atmosphere formed by active interaction among organization members can improve members' creativity [16].

D. Mediating Effect of Intrinsic Incentives

Predictive effect of innovation climate on innovative behavior has been widely accepted, but scholars hold different opinions on the effects that innovation climate influences innovative behavior, because the function mechanism of the above variables is unclear [17]. Most researches regard mediating variables between innovation climate and innovative behavior as individual innovation features or cognitive style [18] [19]. Some scholars have analyzed intrinsic incentive variables in cognitive style on the basis of cognitive evaluation theory. For example, Shalley declares except for material reward, supportive work environment arouses people's interest in job contents and transforms this interest into innovation activity [20]. Elsbach and Hargadon indicate intrinsic incentive will disturb incentive system of organization and finally influence innovative behavior [21]. The above researches are not empirical but theoretical [22], but we can infer that intrinsic incentive may well be the mediating variable between innovation climate in colleges and college students' innovative behavior.

III. RESEARCH DESIGN

A. Sample Selection and Data Collection

In order to obtain evidence to verify the above theoretical assumption, college students major in science and engineering in Tianjin city are researched, and the reasons are as follows: (1) Tianjin city is the city with high-tech economy and key development in the "13th Five-year" plan, and colleges respond to the call of municipal government in promoting innovation and entrepreneurship development, with thick innovation climate; (2) Selection of college students major in science and engineering can reduce the influence on control variable caused by the difference between majors of liberal arts and major of science; (3) Tianjin city has colleges directly subordinate to the Ministry of Education and local colleges. Schools have different levels of innovation input and different support degrees of college students' innovation, so it improves external validity of this research.

Questionnaires are formally distributed to students in Tianjin University, Tianjin University of Technology, Tianjin University of Science and Technology and Tianjin Medical University. Besides, most subjects have participated in innovation activity and thoroughly understand theme of this research, so the data is reliable and representative. In this survey, 550 questionnaires are distributed, with 392 collected and valid questionnaire of 258, effective collecting rate of 46.9 percent.

IV. RESULT DISCUSSION AND RESEARCH SIGNIFICANCE

A. Result Discussion

According to field dynamic theory and social cognitive theory, the research has proposed and demonstrated interaction model among innovation climate in colleges, intrinsic incentive and college students' innovative behavior: How colleges to furthest exert the function of innovation climate, in order to stimulate college students to innovate. Chinese society, government and enterprise increasingly require the support of innovative force. How to cultivate and deliver college students with innovative vision and opinion is distinctly important. The proposition of effective intrinsic incentives will actuate students' innovative behavior.

1) Relationship between innovation climate in colleges and college students' innovative behavior

Research results indicate the support of school and teachers has significant positive correlation with college students' innovative behavior. The support of schoolmates doesn't significantly influence college students' innovative behavior. It provides the latest creative idea for motivation of college students' innovative behavior in field dynamic theory.

School support actuates college students' innovative behavior, keeping intrinsic consistency with assumption of field dynamic theory. School support for innovation is to respond to the requirement of constructing innovation-oriented China. Teachers and students form exchange-interaction relationship in innovation process. Teachers' support will stimulate college students' innovation, which will improve teachers' ability in innovation education. Teachers' accumulation of innovation experience will positively stimulate innovative behavior of college student. Schoolmates' support and college students' innovative behavior don't have significant correlation because schoolmate's support is different and fluctuant.

2) Mediating effect of intrinsic incentives

Intrinsic incentive is partial mediating variable that school support influences college students' innovative behavior. The reason is that school support has intrinsic and extrinsic motivation, including curriculum provision, resource allocation and publicity and commendation of innovative behavior, and both can arouse students' interests in innovation. Intrinsic motivation actuates college students' innovative behavior and refers to the complete mediating variable that teachers' support influences college students' innovative behavior. Teachers' support stimulates college students' innovative behavior spiritually, namely encouraging college students to innovate, guiding them to innovate and setting up the standard for their innovation. Teachers use innovation-type teaching methods and create innovation climate in and after class, which will strengthen students' cognition on teachers' support. The cognition will arouse college students' intrinsic subjective motivator and then have positive influence on college students' innovative behavior.

B. Research Significance

The research uses field dynamic theory and social cognitive theory for the first time and has reviewed paths to stimulate college students' innovative behavior and provides new perspective for theoretical research of college students' innovation. Only the organic combination between innovation climate in colleges and college students' intrinsic incentive can realize college students' innovative behavior, deepening the research that non-profit goal stimulates innovative behavior.

V. RESEARCH LIMITATION AND PROSPECT

The research has limitations of the following two aspects that need further improvement: First, the measurement of college students' innovative behavior uses self-report and may have same source bias. Future researches can adopt multi-channel evaluation, including teacher evaluation and self-evaluation, in order to reduce the bias caused by the same data source. Second, the research mainly considers the influence of innovation climate in colleges and intrinsic incentive on college students' innovative behavior, but there are still other environmental and personal explanatory variables to predict college students' innovative behavior. The results will be more significant if variables like family support and education experience can be researched more thoroughly and systematically in the future.

REFERENCES

[1] Scott S G, Bruce R A. Determinants of innovative behavior: A path model of individual innovation in the workplace[J]. Academy of management journal, 1994, 37(3): 580-607.

[2] Gilson LL,Shalley C E. A little creativity goes a long way: An examination of teams' engagement in creative processes[J]. Journal of Management,2004,30(4): 453-470.

[3] Luthans F, Norman S M,AvolioN B,AveyJ B. The mediating role of psychological capital in the supportive organizational climate-employee performance relationship [J]. Journal of Organizational Behavior, 2008,29: 219-239.

[4] Sun Rui, Wang Naijing, Shi Jintao. Empirical Research on Differences of Innovation Climate in Different Business Organizations in China [J], Nankai Business Review, 2008, 11(2): 42-49

[5] Amabile T M, Schatzel E A, Moneta G B, et al. Leader behaviors and the work environment for creativity: Perceived leader support[J]. The Leadership Quarterly, 2004, 15(1): 5-32.

[6] Amabile T M. Creativity in Content[M]. Boulder CO: Westview Press, 1996.

[7] Isaksen S G, Lauer K J, EKVALL G. Situational outlook questionnaire: A measure of the climate for creativity and change[J]. Psychological reports, 1999, 85(2): 665-674.

[8] Amabile T M,Conti R,Coon H,et al. Assessing the Work Environment for Creativity [J]. Academy of Management Journal,1996, 39: 1154-1184.

[9] Shalley C E, Gilson L L, Blum T C. Matching creativity requirements and the work environment: Effects on satisfaction and intentions to leave[J]. Academy of Management Journal, 2000, 43(2): 215-223.

[10] Jung D I. Transformational and transactional leadership and their effects on creativity in groups[J]. Creativity Research Journal, 2001, 13(2): 185-195.

[11] Oldham G R, Cummings A. Employee creativity: Personal and contextual factors at work[J]. Academy of management journal, 1996, 39(3): 607-634.

[12] Grant A M, Berry J W. The necessity of others is the mother of invention: Intrinsic and prosocial motivations, perspective taking, and creativity[J]. Academy of Management Journal, 2011, 54(1): 73-96.

[13] Zhang X, Bartol K M. Linking empowering leadership and employee creativity: The influence of psychological empowerment, intrinsic motivation, and creative process engagement[J]. Academy of Management Journal, 2010, 53(1): 107-128.

[14] Gagné M, Deci E L. Self-determination theory and work motivation[J]. Journal of Organizational behavior, 2005, 26(4): 331-362.

[15] Woodman R W, Sawyer J E, Griffin R W. Toward a theory of organizational creativity[J]. Academy of management review, 1993, 18(2): 293-321.

[16] Deci E L, Ryan R M. Intrinsic Motivation and Self-determination in Human Behavior[M]. New York: Plenum,1985.

[17] Yi X, Hu W, Plucker J A, et al. Is there a developmental slump in creativity in China? The relationship between organizational climate

and creativity development in Chinese adolescents[J]. The Journal of Creative Behavior, 2013, 47(1): 22-40.

[18] Diane R. Relationships among leader member exchange quality, satisfaction with organizational communication, and creativity in entertainment organizations [D]. Los Angeles: Alliant International University, 2004.

[19] Sun Rui, Shi Jintao, Zhang Tiqin. Empirical Research on Leader Exchange and Team Member Exchange in Chinese Enterprises and Relationship between Organization of Innovation Climate and Employees' Innovative Behavior [J], Journal of Industrial Engineering and Engineering Management, 2009, 23(4): 109-115

[20] Janssen O. The joint impact of perceived influence and supervisor supportiveness on employee innovative behaviour[J]. Journal of occupational and organizational psychology, 2005, 78(4): 573-579.

[21] Zhou J. When the presence of creative coworkers is related to creativity: role of supervisor close monitoring, developmental feedback, and creative personality[J]. Journal of applied psychology, 2003, 88(3): 413-422.

[22] Choi J N, Anderson T A, Veillette A. Contextual inhibitors of employee creativity in organizations the insulating role of creative ability[J]. Group & Organization Management, 2009, 34(3): 330-357.