
ANALYSIS ON INNOVATION ABILITY OF TALENTS BASED ON COGNITIVE THEORIES

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Abstract

In recent years, more and more college students in China choose to start up their own business upon graduation. In the light of psychological ownership, this paper attempts to evaluate the innovation ability of these talents in entrepreneurship. For this purpose, the authors carried out an on-site survey and an online questionnaire survey on 3,700 college students from eastern China's Jiangsu province. Based on the research data, the authors investigated the influence of individual and group (I-G) fitness and incentive factors on the entrepreneurial innovation of college students, as well as the mediating effect of psychological ownership over this influence mechanism. The results show that the I-G fitness has a positive impact on the innovation ability of college students in entrepreneurship, and the impact is partially mediated by psychological ownership. The research results provide guidance for college educators to enhance the entrepreneurial ability of their students.

Key words: College Students' Entrepreneurship, Incentive Factors, I-G Fit, Innovation.

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INTRODUCTION

In the face of the changing market and highly competitive environment, groups need to be motivated to make progress and development, ensuring the continuous adaptiveness and innovativeness. As a group with strong innovative and creative ability, college students are the theoretical source and core elements of group innovation. They can provide the group with innovative ideas, and help to maintain and enhance its competitiveness. Therefore, in the era of knowledge economy, college students' entrepreneurial innovation has attracted more attention of management practitioners and scholars.

Individual-level innovation refers to the novel and practical thought, concepts or ideas that individuals propose to achieve their missions (Scott, 2006), which are influenced by factors such as cognition and motivation. Regarding the

motivation as an important source of individual innovation, the group satisfies the entrepreneurial innovation motivation of college students through the design work (Autio, Kenney, Mustar et al., 2014). These relatively stable motivations constitute college students' entrepreneurial incentive preferences. When the incentive factors provided by the group match the individual incentive preferences, it can promote the positive behaviour of college students (Ireland, Kuratko, & Morris, 2006). Therefore, this study attempts to explore the impact of individual and group (I-G) fit on the entrepreneurial innovation of college students from the perspective of incentive factors.

The group wants to retain valuable college students for entrepreneurship and influence their behaviour by shaping their sense of ownership (Tamásy, 2010). This sense of ownership is called psychological ownership by scholars (Kemp, 2016). The study found that in the process of satisfying their own needs of the individuals, group characteristics and individual characteristics are important media for the generation of psychological ownership. Thus,

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from the perspective of psychological ownership this study analyses the impact of I-G fit on college students' entrepreneurial innovation and its internal mechanism.

As above, this study theoretically explores the role of I-G fit on college students' entrepreneurial innovation and its influencing mechanism. This shall help to formulate the group's incentive policies for college students' entrepreneurial innovation needs, promote the college students' entrepreneurial innovation behaviour, and maintain the group's continuous progress and development.

LITERATURE REVIEW AND RESEARCH HYPOTHESIS

Impact of I-G fit on individual innovation

Individual-Group Fit (I-G fit) means that an individual's behaviour is influenced by the interaction between the individual and its environmental factors, that is, the use of the fit generated by the individual-group interaction to bring positive benefits to the individual and the group. I-G fit includes complementary fit and consistent fit, of which the complementary fit refers to the relationship between individual characteristics and group characteristics that can complement each other to satisfy one's needs (Tang & Koveos, 2009). The research shows that from the perspective of incentive factors, factors such as hope, self-efficacy, optimism and resilience have a positive effect on college students' innovation behaviour (Pannekoek, van Kooten, Kemp et al., 2005). Therefore, when the motivational preference of college students is satisfied by the group, the positive behaviour of college students' entrepreneurship shall be stimulated. As a group with strong innovative and creative ability, college students deserve more attention from the group. Based on this, the following hypotheses are made:

H1: I-G fit has a positive impact on individual innovation in college students.

Mediating effect of psychological ownership

Psychological ownership refers to an individual's state of feeling that the object belongs to oneself. Pierce et al. believe that the psychological ownership is generated from three needs: effectiveness and influence, self-identification, and possession of a certain space (Wagner, 2012). Based on this, Avey proposed a

four-dimensional structure of psychological ownership: self-efficacy, responsibility, belonging and self-identity (Farrow, Johnson, & Larson, 2000); when the motivational preferences of college students' entrepreneurship are satisfied, it will further promote the generation of individual psychological ownership (Perrini & Vurro, 2006). Thus, the following hypotheses are made:

H2: Incentive factors have a positive impact on psychological ownership of college students' entrepreneurship.

The entrepreneurial innovation behaviour of college students is influenced by the subjective environment. The higher entrepreneurial psychology level of college students can better stimulate their entrepreneurial innovation (Gu, 2013). Entrepreneurship has more risks for college students. Whereas, high levels of self-efficacy encourage individuals to take risks, possession and ownership make college students entrepreneurs acquire a sense of security and belonging in the group. So, the psychological ownership can stimulate the positive behaviours of college student entrepreneurship. Therefore, the following hypotheses are made:

H3: Psychological ownership has a positive impact on college students' entrepreneurial innovation;

H3a: Self-efficacy has a positive impact on college students' entrepreneurial innovation;

H3b: Responsibility has a positive impact on college students' entrepreneurial innovation;

H3c: Sense of belonging has a positive impact on college students' entrepreneurial innovation;

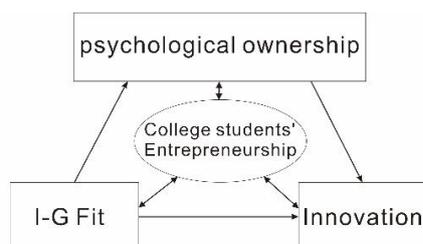
H3d: Self-identity has a positive impact on college students' entrepreneurial innovation.

Psychological ownership is a bridge connecting the groups and individuals. The group characteristics have an impact on the attitudes and behaviours of college students' entrepreneurship through psychological ownership, and high-level psychological ownership can positively influence college students' entrepreneurial innovation behaviour. It can be seen that the matching between the individual characteristics and the group characteristics can improve the psychological ownership of the college students, and then the sense of responsibility and belonging caused by the high level of psychological ownership can help the individual to produce positive behaviours. Therefore, the following hypothesis is proposed:

H4: I-G fit influences college students' entrepreneurial innovation through the mediating role of psychological ownership.

Based on the above research hypothesis, the framework of this study was constructed, as shown in Figure 1.

Figure 1. Research framework



RESEARCH DESIGN

Procedures and samples

In this study, 3,700 college students from Jiangsu Province were selected as respondents. Through on-site survey and on-line questionnaires, 2,608 valid questionnaires were collected, with the effective recovery rate of 70.5%.

Variable measurement

Incentive factors I-G fit

Using the incentive theory, this study interviewed the respondents to determine the incentive factors for entrepreneurial innovation. At the first stage of pre-survey research, it removed the most unfavourable incentive factors of college students, and draws the ones for this study. There were 28 items in the questionnaire from the perspective of individual and group. The respondents respectively answered about the preference for incentive factors and the implementation degree of the group, and the absolute value of the difference between the two answers was the I-G fit level of the specific incentive factor. The smaller the absolute value, the higher the fit degree between the individual and the group. The Cronbach's value was 0.871.

Psychological ownership

The psychological ownership was measured using a scale developed by Avey et al., including four dimensions: self-identity, self-efficacy, a sense of belonging, and responsibility. Item

(Huggins & Thompson, 2015). The Cronbach's value was taken to be 0.895.

Innovation

The innovation was measured on the basis of a scale consisting of 4 items with a Cronbach's value of 0.902. This study used the Liker 5-point scoring method to measure the variables. In the measurement of psychological ownership, 1 to 5 means "disagree" to "completely agree"; in the innovation measurement, 1 to 5 means "low" to "high"; in the measurement of the I-G fit, 1 to 5 indicates "complete fit" to "complete non-fit", and the smaller value means a better fit.

ANALYSIS RESULTS

Confirmatory factor analysis

Through the confirmatory factor analysis, the variables involved in the study were constructed and distinguished. According to Table 1, compared with the single factor model and the two-factor model, the three-factor model fits the actual data optimally, indicating that the three variables in this study have good discriminant validity.

Table 1. Confirmatory factor analysis of constructive differentiation

Model	χ^2	df	χ^2/df	RMSEA	CFI	TLI
Three-factor	41.556	14	2.673	0.081	0.93	0.93
Two-factor	397.242	18	17.313	0.157	0.89	0.81
Single factor	488.095	22	20.112	0.208	0.79	0.75

Note: Three-factor model (incentive factor I-G fit, psychological ownership, innovation), two-factor model (incentive factor I-G fit + psychological ownership, innovation), single factor model (incentive factor I-G fit + psychological ownership + Innovation)

Common method deviation

Two methods were used to test the common method deviation problem: 1) Harman single factor test method; the results showed a total variance interpretation rate of 62%, and the variance interpretation rate of the first factor was 18.6%, which did not account for half of the total variance interpretation rate; 2) Control methods for non-measurable potential method factors. According to Table 2, the optimization degree of RMSEA, CFI and TLI in the controlled model was between 0.01 and 0.02 (Grossmann,

Table 2. Comparison of model fitting indices before and after control

Model	χ^2	df	χ^2/df	RMSEA	CFI	TLI
Before control	41.556	14	2.673	0.081	0.93	0.91
After control	36.171	8	2.489	0.072	0.93	0.92

Table 3. Mean, standard deviation and correlation coefficient of variables (n=2,608)

Variables	M	S. D	1	2	3	4	5
1 sex	1.18	0.50					
2 age	0.98	1.43	-0.031				
3 educational background;	2.96	0.66	-0.008	-0.098**			
4 I-G fit	0.73	0.26	-0.033	-0.053	0.053		
5 psychological ownership	2.99	0.63	-0.127*	0.103*	-0.009	-0.353**	
6 innovation	3.88	0.48	-0.089**	0.078	-0.042	-0.315**	0.762

Note: * indicates $P < 0.05$, ** indicates $P < 0.01$, *** indicates $P < 0.001$

2009). Therefore, there was no common method bias problem in this study.

Descriptive statistics

Based on the data collected, the most important incentive factors are personal growth and development, entrepreneurial cognition and entrepreneurial innovation, entrepreneurial ability and entrepreneurial environment. Table 3 lists the mean, standard deviation, and correlation coefficient of each variable. I-G fit is significantly correlated with psychological ownership and innovation; psychological ownership is significantly correlated with innovation.

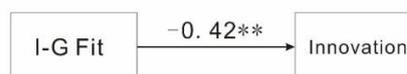
Testing of research hypothesis

In view of the influencing factors on the college students' entrepreneurial innovation and psychological ownership, the hypothesis model was tested by software AMOS22.

Impact of incentive factor I-G fit on individual innovation

The fitting indices χ^2/df , RMSEA, CFI, TLI of the relation model between the incentive factor I-G fit and individual innovation were 2.188, 0.057, 0.93, 0.93, respectively, indicating that the model fits ideally. According to Figure 2, the degree of I-G fit (the lower absolute value of the difference indicates a better fit) has a significant positive impact on the entrepreneurial innovation of college students; the standardized path analysis coefficient was -0.34. Thus, H1 was verified.

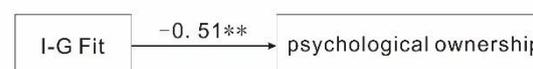
Figure 2. Relationship between I-G fit and individual innovation



Testing of mediating effect

(1) The fitting indices χ^2/df , RMSEA, CFI, TLI of the relationship model between the I-G fit and psychological ownership were 2.355, 0.049, 0.93, and 0.91, respectively, indicating that the model fits ideally. According to Figure 3, the degree of I-G fit has a significant positive impact on psychological ownership; the standardized path analysis coefficient was -0.44. Thus, H2 was verified.

Figure 3. Relationship between I-G fit and psychological ownership

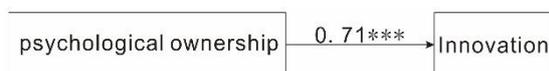


(2) The impact of psychological ownership on individual entrepreneurial innovation.

The fitting indices χ^2/df , RMSEA, CFI, TLI of the relationship model between the psychological ownership and individual innovation were 1.336, 0.017, 0.93, and 0.91, respectively, and the model fits ideally. According to Figure 4, psychological ownership has a significant positive impact on individual innovation; the standardized path analysis

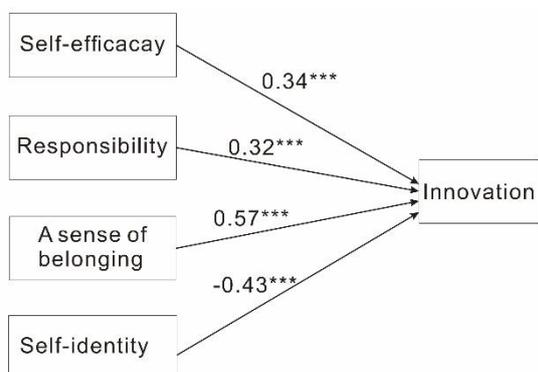
coefficient was 0.71. Thus, H3 was verified.

Figure 4. Relationship between psychological ownership and individual innovation



The fitting indices of the relationship model between the psychological ownership components and the individual innovation were 2.223, 0.062, 0.93, 0.91, respectively, and the model fits ideally. According to Figure 5, individual self-efficacy, sense of responsibility, and sense of belonging have a significant positive impact on individual innovation; the standardized path analysis coefficients were 0.34, 0.32, and 0.57, respectively. Thus, H3a, H3b, and H3c were verified. Self-identity has a negative significant impact on individual innovation. So H3d wasn't verified, since the conclusion was contrary to the hypothesis.

Figure 5. Relationship between psychological ownership and individual innovation

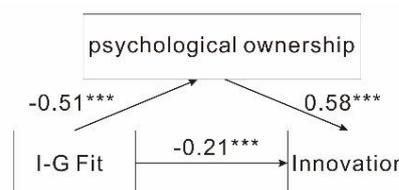


(3) The mediating role of psychological ownership

The fitting indices χ^2/df , *RMSEA*, *CFI*, *TLI* of I-G fit, psychological ownership, and innovation were 2.329, 0.055, 0.93, and 0.91, respectively, and the model fitted ideally. According to Figure 6, the regression coefficients between the variables were significant. Compared with Figure 2, the normalized regression coefficient of the incentive factor I-G fit and innovation changed from -0.45 to -0.21, which indicates that with the

mediating role of the psychological ownership, the correlation between I-G fit and innovation was weakened, while the regression coefficient of psychological ownership and innovation was still significant. Therefore, psychological ownership plays a partial mediating effect between the degree of I-G fit and individual innovation. Thus, H4 was verified.

Figure 6. Relationship between the I-G fit, psychological ownership, and innovation



RESULTS AND DISCUSSION

Research results

First of all, the survey results showed that personal growth and development, entrepreneurial cognition and entrepreneurial innovation, entrepreneurial ability and entrepreneurial environment are the most important incentives for college students' entrepreneurial innovation. Secondly, this study verifies that the I-G fit of college students has a positive impact on individual innovation. The previous scholars summed up individual incentive preferences through a large number of empirical studies, and analysed the relationship between individual characteristics and their motivational preferences. Whereas, this study explores the impact of I-G fit on college students' entrepreneurial innovation from the perspective of incentive factors. Finally, it verifies that college students' I-G fit stimulates individual innovation through psychological ownership. In the process of hypothesis verification, the conclusion opposite to H3d was obtained, i.e., self-identity will inhibit the generation of individual innovation. For this, it's believed in this study that when college students' entrepreneurial innovation has higher psychological ownership, it will bring nervous and anxious emotional experiences, thereby generating a negative impact.

Theoretical contribution

(1) Incentive preference is the deep trait of

individual innovation, which is of great significance to individuals and groups.

In the past, scholars have summed up the incentive preferences of college students through empirical research, but ignored that the incentive preferences as a kind of characteristics of college students requires groups to explore and guide. For individuals, motivation provides intrinsic motives for their achievement, promoting the individual innovation; for the group, it promotes the entrepreneurial innovation of college students by satisfying individual incentive preferences. Therefore, this study explores its impact of I-G fit on individual innovation from the perspective of incentive factors, and reflects the idea of interaction.

(2) The promotive effect of psychological ownership on college students' entrepreneurial innovation.

Psychological ownership can enhance college students' sense of belonging and responsibility to the group, and improve their sense of efficacy, so that individuals can produce innovative behaviour. Therefore, this study verifies that psychological ownership plays a more significant mediating role between the I-G fit and the college students' behaviour. The Research findings support and extend the existing research theories of psychological ownership, and reveal the mechanism for the influence of I-G fit on college students' entrepreneurial innovation.

Management enlightenment

(1) Paying attention to the incentive preference I-G fit for college students' entrepreneurial innovation.

College students have a sense of innovation in their entrepreneurship, while managers should accurately grasp the characteristics of college students, enabling them to be creative in behaviours. Therefore, in the process of selecting and cultivating college students, those who are consistent with the group values should be selected and the matching of groups and individuals should be promoted from the aspects of personal growth and development, entrepreneurial cognition etc. to achieve group goals.

(2) Focusing on the incentive preferences and individual innovation in college students' entrepreneurial innovation.

When the incentive preferences of college students' entrepreneurship are met, they are

more willing to try different ways to solve problems. Therefore, from the perspective of incentive factors, the group can promote the creative behaviour of college students' entrepreneurship by providing them with the material resources, training opportunities and fair competition environment needed for their work;

(3) Improving the level of college students' psychological ownership

Through empirical research, this paper finds that high level of psychological ownership can positively influence the innovative behaviour of college students. Therefore, the group should improve the psychological ownership level of college students through management measures, such as building a cultural group atmosphere, enhancing the sense of responsibility and belonging of college students in entrepreneurship. This shall promote the creation of innovative behaviours, thus achieving a win-win situation for individuals and groups.

REFERENCES

- Autio, E., Kenney, M., Mustar, P., Siegel, D., & Wright, M. (2014). Entrepreneurial innovation: The importance of context. *Research Policy*, 43(7), 1097-1108.
- Farrow, P. H., Johnson, R. R., & Larson, A. L. (2000) Entrepreneurship, Innovation, and Sustainability Strategies at Walden Paddlers, Inc. *Interfaces*, 30(3), 215-225.
- Grossmann, V. (2009). Entrepreneurial innovation and economic growth. *Journal of Macroeconomics*, 31(4), 602-613.
- Gu, S. (2013). Institutional entrepreneurship and policy learning in China. *Journal of Science and Technology Policy in China*, 4(1), 36-54.
- Huggins, R., & Thompson, P. (2015). Entrepreneurship, innovation and regional growth: A network theory. *Small Business Economics*, 45(1), 103-128.
- Ireland, R. D., Kuratko, D. F., & Morris, M. H. (2006). A health audit for corporate entrepreneurship: innovation at all levels: part I. *Journal of Business Strategy*, 27(2), 10-17.
- Kemp, S. (2016). Psychological Ownership. Was Communism Doomed.
- Pannekoek, L., van Kooten, O., Kemp, R., & Omta, S. (2005). Entrepreneurial innovation in chains and networks in Dutch greenhouse horticulture. *Journal on Chain & Network Science*, 5(1), 39-50.

- Perrini, F., & Vurro, C. (2006). Social Entrepreneurship: Innovation and Social Change Across Theory and Practice. *Social Entrepreneurship*, 57-85.
- Scott, A. J. (2006). Entrepreneurship, Innovation and Industrial Development: Geography and the Creative Field Revisited. *Small Business Economics*, 26(1), 1-24.
- Tamásy, C. (2010). Rethinking Technology-Oriented Business Incubators: Developing a Robust Policy Instrument for Entrepreneurship, Innovation, and Regional Development. *Growth & Change*, 38(3), 460-473.
- Tang, L., & Koveos, P. E. (2009). Venture Entrepreneurship, Innovation Entrepreneurship, and Economic Growth. *Social Science Electronic Publishing*, 9(2), 161-171.
- Wagner, M. (2012). Entrepreneurship, innovation and sustainability: An introduction and overview. *Entrepreneurship*, 1-10.