



Student Innovativeness as Manifestation of Subjectivity

Veronika A. Artemeva

Saint Petersburg State University of Architecture & Civil Engineering, RUSSIA

Marianna Y. Dvoretzkaya

Herzen State Pedagogical University of Russia, RUSSIA

Elena K. Veselova

Herzen State Pedagogical University of Russia, RUSSIA

Elena Y. Korjova

Herzen State Pedagogical University of Russia, RUSSIA

Tatyana V. Esikova,

Russian State Hydrometeorological University, RUSSIA

Received 17 June 2017 • Revised 17 July 2017 • Accepted 31 July 2017

ABSTRACT

The urgency of the problem is caused by the fact that the creation of innovation and innovation environment in all sectors of the economy and people's lives puts forward special demands to each individual, the society in general and the quality of education and skills of personnel. The paper describes the results of the study of the hierarchy of values, personality traits according to Cattell and the locus of control among students with a high level of innovativeness. As an approach to the evaluation of innovativeness, the concept of M. Kirton was used. As a result of the research, it was revealed that individuals with high innovative activity are characterized by the internal locus of control and a set of basic values that differs from the set of basic values of a creative personality and it represents by itself a combination of such values as independence, stimulation, hedonism and power.

Keywords: innovativeness, innovative thinking, innovative personality, subjective potential, student subjectivity

INTRODUCTION

An important task of higher professional education is to train students for active involvement in the innovative vocational environment, for personal self-realization in the

© **Authors.** Terms and conditions of Creative Commons Attribution 4.0 International (CC BY 4.0) apply.

Correspondence: Marianna Y. Dvoretzkaya, Herzen State Pedagogical University of Russia, Russia.

✉ dvoretzkaya.marianna@yandex.ru

conditions of a current changing society, for solving the problems posed by modern high-tech production. University education should be aimed at developing the subjectivity of the student, which involves activity and the ability to realize their creative abilities, i.e. developing of students' innovativeness.

In the modern scientific literature devoted to the issues of the psychology of innovation, much attention is paid to the traits of the individual who is capable to create and implement innovations. There are even stable new terms, such as "*innovative personality*", i.e., the person who is included in the innovative process; "*innovativeness*" - as a person's ability to perceive, create, refine and implement new and original ideas; "*innovative thinking*" [1, 2, 3, 4, 5, 6] Innovativeness is a powerful potential for personal development which manifests itself as an openness to new experience, willingness for creative, authorial approaches to solve vocational problems, the ability to master, generalize, enrich and spread new ideas. Innovativeness is provided by the developed subjectivity of the personality, its activity, and orientation towards self-cognition, self-development, and self-realization [7, 8, and 9].

The discussion of the issue of the innovative personality as a special industrial type of people began in the 60s of the last century, as in an industrial society people had difficulties mastering new technologies and getting used to them. There was a need to understand and support people - innovators, who aspired to improve these technologies. Initially, the task was to describe a man of a new type, i.e. to create a kind of psychological and socio-psychological portrait of a new type of person - an innovative person.

The concept "*innovative personality*" was first introduced by Everett Hagen in 1963 [10], who suggested that there were polar personality types which were characteristic to traditional society and modern society. The type of personality that corresponded to the traditional society, he attributed authoritarianism, and the second type - directly opposite traits. E. Hagen considered the innovative personality as a prerequisite for economic growth, the spread of entrepreneurship and the accumulation of capital [10]. To the main characteristics of the innovative personality, the author referred such traits as openness, curiosity and the desire to manage events, to influence and control various phenomena; taking responsibility for the bad consequences of the world, involving the search for the best solutions and attempts to make changes; frankness and tolerance for subordinates, an approving attitude towards their desire for innovation and originality; creativity, stimulating identity and the desire for novelty.

This paper studies the innovativeness of the personality as a manifestation of its subjectivity.

The *purpose* of this work is to study the psychological characteristics of students with high and low innovativeness.

The hypothesis is - students with high indicators of innovative activity have an internal control locus and a set of values that distinguishes them from students with low indicators of innovation activity.

As the main approach to assessing the innovativeness of the student's personality, the concept of M. Kirton is used in this paper, which allows people to be differentiated depending on their attitude to new ideas, technologies and proposals [11]. Within the framework of this concept, the main emphasis is on studying the stylistics of human thought activity. The research focuses on the qualitative peculiarity of the processes of thinking and decision making in the conditions of innovation activity. In accordance with this concept, each person is at a certain point of the scale: *an adapter - and innovator*. In the most general sense, the term "innovator" (an innovative person) means a person of a new social type that meets the imperatives of the epoch. It is assumed that it is focused on creating innovations, implementing them into all spheres of public life.

Analyzing various studies in this direction [2, 12, 13], it can be noted that for a long time the only tool describing the cognitive style of the personality involved in the innovation process was the Kirton Adaptation-Innovation Inventory (KAI) a questionnaire, which included 32 Statements, the degree of agreement with which was estimated by respondents on a five-point scale.

Numerous studies indicate that the basic values of culture affect not only economic development, the health of the population, life expectancy, a sense of well-being and happiness, but also ingenuity, innovative dispositions of the individual [14, 15, 16, 17, 18]. Nevertheless, the connection between cultural values, on the one hand, and the innovativeness and ingenuity of members of society, on the other, has not been sufficiently studied.

O.S. Sovetova believes that the willingness for changes in a concrete activity will be higher if the value orientation structure contributes to this, that is, the innovative disposition will be coordinated internally [6].

RESEARCH DESIGN AND METHODOLOGY

In the period of 2011-2015 years Artemeva V.A. conducted an empirical study in which students of architectural and construction specialties of the last courses of the St. Petersburg University of Architecture and Civil Engineering participated. Totally 2985 people were interviewed: 961 men and 1824 women. The average age was 21.13 years.

The following methods were used in the psychological study:

1. The type of innovative thinking was studied with the help of the questionnaire "KAI" by M. Kirton [11].
2. Investigation of the hierarchy of values of the innovative personality was conducted according to Schwartz's questionnaire for the study of personality values (adaptation of V.N. Karandashev) [19].

3 The level of subjective control (LSC- Level of subjective control) was assessed using the J. Rotter questionnaire (in the modification of E.F. Bazhin).

The locus of control is the property of the personality that is formed in the process of socialization and which shows the measure at which a person takes responsibility for one's own actions and life. People differ between each other by the fact how they explain the reasons for events that are significant to them and where they localize control over them. The indicators of the Level of subjective control questionnaire are organized in accordance with the principle of the hierarchical structure of the activity regulation system in such a way that they include a generalized indicator of individual LSC, invariant to frequent activity situations, two indicators of the average community level, which are differentiated according to the emotional sign of these situations, and a number of situational-specific indicators

4. To study the emotional, behavioral, communicative, intellectual characteristics of the innovative personality, the Multifactor Personal Questionnaire-16 PF (R. Cattell) was used.

PROCEDURE

The study was conducted in two stages.

1) At the first stage, the features of innovative thinking of students were studied using the technique of Kirton. At this stage, the study was conducted on a general sample, totaling 2,985 people. 961 of them - men and 1824 - women. The average age was 21.13 years.

The average indicator of the innovativeness coefficient of KAI-Kirton on this sample is shown in **Table 1**.

Table 1. Average value of the KAI Kirton on the sample

N = 2985

№	The main indicator, The name of the technique	The mean (M)	σ	min/max by sample
1	Innovation indicator "KAI" (M. Kirton)	105,5	14,64	32 - 152

Based on the indicators of innovativeness (according to the method of Kirton) and the results of the method of isolating the marginal groups, groups with high, medium and low innovativeness were identified. In accordance with the theory of M. Kirton, these groups conventionally were named as "innovators", "medium" and "adapters", respectively:

a) "innovators" - students with high index of innovative thinking (according to Kirton) - only 330 people (among them men - 117, women - 213). This group includes students with $KAI > 120.15$;

b) "adapters" - those who has low KAI-Kirton index. Totally, 399 people, among which men - 204, women - 195. Indicator $KAI < 90, 85$;

c) "average" ones - those respondents whose KAI-Kirton index turned out to be the average of ± 6 , i.e. KAI is in the range from 90.84 to 129.14. Totally, 2,256 people, including 640 men and 1,416 women.

2) At the second stage, a comparative analysis of the personal characteristics of "innovators" and "adapters" was carried out.

RESULTS

The results were analyzed by comparing the average indicators. **Table 2** presents the average indicators of the psychological characteristics of students of architectural and construction specialties with high and low innovativeness according to M. Kirton.

Table 2. Psychological characteristics of students of architectural and construction specialties with high and low innovativeness

№	Indicators		A group with low innovativeness N= 399		Group with high innovativeness N= 330		The difference in the t-test of Student
			M	σ	M	σ	
1	KAI - innovation coefficient of M. Kirton		84,85	6,15	125,65	5,56	$p \leq 0,01$
4	Value orientations	independence	20,72	5,67	24,27	6,23	$p \leq 0,01$
		stimulation	9,26	4,49	14,25	5,04	$p \leq 0,01$
		hedonism	12,58	6,06	15,55	4,83	$p \leq 0,01$
		Power	15,60	5,47	17,39	5,98	$p \leq 0,01$
5	Локус-контроля (Дж. Роттер)	GI - general internality	4,49	1,93	5,33	1,86	$p \leq 0,01$
		IA - the internationality in the field of achievements	5,70	2,34	6,37	1,95	$p \leq 0,01$
		IF-internality in the field of failures	4,57	1,84	5,36	2,50	$p \leq 0,01$

6	Cattell's 16 Personality Factors Test	S - emotional instability - stability	4,94	2,57	5,77	2,69	p≤0,01
		E - subordination-dominance	5,91	2,61	6,64	2,45	p≤0,01
		F - restraint - expressiveness	4,98	2,34	6,42	2,29	p≤0,01
		H - shyness - courage	6,03	2,58	7,77	2,46	p≤0,01
		I - stiffness - sensitivity	5,73	2,11	5,00	2,50	p≤0,01
		L - credulity - suspicion	5,32	2,36	6,78	2,31	p≤0,01
		M - practicality - dreaminess	5,40	1,94	5,85	2,12	p≤0,05
		O - calmness - anxiety	6,85	2,58	6,34	2,62	p≤0,05
		Q1 - conservatism - radicalism	4,53	2,51	5,61	2,50	p≤0,01
		Q4 - relaxation - tension	5,16	2,16	5,74	2,12	p≤0,01

DISCUSSION

The question is - what distinguishes "adapters" from "innovators"?

Speaking about value orientations, significant differences are found in the following values (innovators have higher indicators than adapters):

- Independence (self-regulation). Motivational goal: independent thoughts and actions (choice, creativity, research), which are dictated by the individual's need to be autonomous and independent one.

- Stimulation (completeness of life sensations). Motivational goal - the novelty and competition in life, which are necessary to maintain the optimal level of activity of the organism.

- Hedonism. The motivational goal is pleasure, sensual pleasure, and rapture with life.

- Power. The motivational goal is the acquisition of social status, prestige and domination over people.

As it can be seen from Table 2, the indicators of overall internality, internality in the areas of achievements and failures of innovators turned out to be higher. Innovators are characterized by the internal locus of control, that is, in their decisions, as well as

evaluations of their work results, achievements and failures, they rely on internal criteria, and not on the opinions of others.

Based on the indicators of personal factors according to R. Cattell's method, it can be noted that:

The innovators, according to the results of the research, are active ones; they manifest expressiveness in social communication, demonstrate their willingness to join new groups, are inclined to leadership, but are restrained in direct interpersonal contacts. They are prone to extraversion (by a combination of indicators A, F, H).

- The combination of indicators relating to communicative properties (E, L, (Q2, G, N)) speaks about independence in making intellectual decisions, and behavior; openness and straightforwardness in relation to people.

- Emotional-volitional characteristics which are combined with indicators (C, O, Q4, (L, G) and (I, M, O) - indicate emotional plasticity, a certain dissatisfaction with oneself, some dissatisfaction, which provides the desire for self-actualization.

- Intellectual characteristics of innovations' creators in the sample (B, M, Q1, (E)) are: dreaminess, interest in intellectual new knowledge, striving for free-thinking, radicalism, breadth of views. A high indicator for (E) indicates a tendency to take independent, non-ordinary decisions [according to Kapustin].

Adapters - are characterized by individual work, they are more closed, directed to their inner world, introverted.

- Communicative features of adapters: their character shows softness, suppleness; subordination to the requirements and opinion of the group. Emotional-volitional characteristics - they are more emotionally unstable and anxious ones than innovators, they are rigid, in behavior they can show steadiness and calmness. Low indicators for the factors N, O, Q4 suggest low motivation, self-contentment, inner relaxation.

- Intellectual characteristics - a specific imagination, focus on solving specific intellectual problems. Criticism and conservatism in the adoption of something new, the reduced intellectual interests, low analytical thinking.

CONCLUSION

1. The main hypothesis of the study is confirmed - an individual with high innovative activity is characterized by the internal control locus and a certain set of basic values.

2. The set of basic values of an innovative personality is different from the set of basic values of a creative person [20] and represent a combination of such values as independence, stimulation, hedonism and power.

3. The personal characteristics of innovators and adapters in our sample largely coincide with those described by Kirton, and obtained by using other methods of research [11]. This fact, in our opinion, confirms the reliability of the results obtained.

4. Turning back to the provision on the need to train students for active inclusion in an innovative vocational environment, it is important to draw attention to the fact that only 11.05% of respondents in the sample can be attributed to innovators (among all innovator there were 12.17% of men and 11.6% % of women). Thus, the need to include technology that enhances the innovativeness of the individual is evident.

REFERENCES

1. Autio, E., Kenney, M., Mustar, P., Siegel, D. & Wright, M. (2014). Entrepreneurial innovation: The importance of context. *Research Policy*, 43, 1097-1108.
2. Basadur, M., Taggar, S. & Pringle, P. (1999). Improving the measurement of divergent thinking attitudes in organizations. *Journal of Creative Behavior*, 33, 75-111.
3. Delya, V.P. (2011). Innovation thinking in the XXI century. Balashikha: De-Po.
4. King, N. (1992). Modelling the innovation process: An empirical comparison of approaches. *Journal of Occupational and Organizational Psychology*, 65, 89-100.
5. Shevchenko, V.N. (2010). Innovation personality as a social type. *Scientific news of the Belgorod University. Philosophy. Sociology. Law*, 11. URL: <http://cyberleninka.ru/article/n/innovatsionnaya-lichnost-kak-sotsialnyy-tip>
6. Sovetova, O.S. (1997). Innovations: theory and practice. St. Petersburg: St. Petersburg State University publishing.
7. Andreas, W. & Strannegård, L. (2014). Developing researching managers and relevant research – the ‘executive research programme. *Innovations in Education and Teaching International*, 51(4), 411-424.
8. Kirton, M.J. & De Ciantis, S.M. (1986). Cognitive style and personality: The Kirton Adaption-Innovation Inventory and Cattell's Personality Factor Inventories. *Personality and Individual Differences*, 7, 141-146.
9. Korjova, E.Y., Dvoreckaja, M.Y. (2005). Psychological diagnostics of person health: subjective and spiritual aspects. *Journal of applied psychology*, 1, 11-27.
10. Hagen, E.E. (1963), How Economic Growth Begins: A Theory of Social Change. *Journal of Social Issues*, 19, 20-34.
11. Kirton, M. J. (2003). Adaption and innovation in the context of diversity and change. London: Routledge.
12. Keller, R.T. & Holland, W.E. (1978). A cross-validation study of the Kirton Adaption-Innovation Inventory in three research and development organisations. *Applied Psychological Measurement*, 2, 563.
13. Artemeva, V.A. (2013). The establishment of the innovative Outlook of students of architectural specialties. *Innovations in education*, 12, 91-96.
14. Artemeva, V.A. & Veselova, E.K. (2014). Innovation personality: the moral-psychological aspects. *News of civil engineers*, 4(45), 128-133.
15. Dvoretzkaya, M.Y. (2004). Antropology: History and theory. St.Petersburg: Herzen Pedagogical University Publishing.
16. Korjova, E.Yu. (2015). Introduction to the psychology of life situations. St. Petersburg: Society in the memory of abbess Taisia.

17. Radevskaya, N. S., Veselova, E. K., Dvoretzkaya, M., Korjova, E. Yu. & Monakhova, L. Yu. (2016). Educational Environment of University - A Model of International Students' Socio-Psychological Adaptation to the Ethno-Cultural Characteristics of Society. *Journal of Environmental Management and Tourism*, 7(2(14)), 291-297
18. Schwartz, S.H. (2007). Cultural and individual value correlates of capitalism: A comparative analysis. *Psychological Inquiry*, 18, 52-57.
19. Artemeva, V.A. (2004). The teaching of 'psychology of creativity'. *Australian Journal of Psychology*, 56, 157-158.

<http://www.eurasianjournals.com>