

Psychological Capabilities Affecting Agricultural Students' Entrepreneurship Level: a Comparative Study

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Abstract: Unemployment for young men and women remains at high levels around the world. One of the solutions to this problem is entrepreneurship. The purpose of this study was to assess and compare agricultural students' psychological capabilities affecting entrepreneurship level. A survey was conducted among 250 students in Tehran University. To collect data, a structured questionnaire was used. The study found that risk taking capability of female students (at B.Sc and M.Sc levels) was higher than male students (this is inconsistent with previous studies) but male students' creativity capability (M.Sc students) and achievement motivation capability (PhD students) were higher than those of female counterparts. Also there were significant differences between students who had entrepreneurship experience and students who had not such experience on all of the aforementioned psychological capabilities level except creativity capability.

Key words: Entrepreneurship, Psychological Capabilities, Agricultural Students creativity capability,

INTRODUCTION

Since the mid-1970s, concerns have been rising over the socio-economic situations of young people in many countries and the prospects of creating additional livelihood opportunities for them^[3,46]. Unemployment for young men and women remains at high levels around the world^[1]. The same scenario regarding unemployment especially in the agricultural sector is going in Iran. According to Iran Administration and planning organization (AOP), unemployment rate has increased from 9.1% in 1996 to 14.2% in 2001^[2]. In fact, lack of balance between Labor demand and supply is supposed to be the main reason. Unemployment crisis will affect all economical, cultural and social aspects of a society and sometimes will be source of irremediable bad effects. Experiences have proved this crisis and its subsequent social effects neither don't have spontaneous, ideological and ethical solution, nor is it possible to eliminate it integrally and in a short time. As a result of Entrepreneurship has been announced as one of the solutions to this crisis by lots of countries^[3]. In order to support the true meaning of entrepreneurship^[27] it suggested that learning approaches and methods that incorporate elements of innovation and risk taking should be used^[18,30]. One of the first steps towards competency-based education is the

identification of relevant entrepreneurial capabilities as they are believed to predict business formation and success within and across cultures^[30]. Other studies on entrepreneurial capability have been conducted by Chandler and Jansen^[27], Chandler and Hanks^[6], and Man and Lau^[29] in order to identify which capabilities are crucial in starting and maintaining a business.

Ronstad^[43] suggested a set of fourteen skills to be developed through entrepreneurship education. Some of these skills included creativity, ambiguity tolerance, opportunity identification and venture evaluation, career assessment, deal making, networking, and ethical assessment. By examining six European entrepreneurship educations and training programs, Garavan and O'Conneide^[16] indicated that there were some specific elements which formed part of the content of all programs. These elements included reality-testing skills, creativity, ambiguity tolerance and stress-coping mechanisms. They argued that the consideration of these elements recognizes the unique situations faced by entrepreneurs.

Hood and Young^[21] maintain that four primary areas must be developed for entrepreneurial success. These areas focus on content, skills and behaviors, mentality and personality. By asking 100 leading entrepreneurs and chief executive officers (CEOs) in America's fastest-growing entrepreneurial firms, they

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found that content areas of knowledge are those mainly addressed on business education, such as finance, cash management, accounting, and marketing; and also Leadership, oral and written communication, and human relations are the most important skills for successful entrepreneurship.

Moreover, mentality factors include creativity, opportunistic thinking and vision. The fourth area refers to personality traits, which are usually believed to be more stable and therefore, less likely to be changed. Brockhaus^[5] found that entrepreneurs have greater internal locus of control than the general population; therefore, entrepreneurs believe that the outcome of a business venture will be influenced by their own efforts.

The result of research of Reynaldo et al.^[40] showed students were weakest in opportunity seeking, risk taking, and self-confidence and practicing entrepreneurs were weakest in Risk Taking. In the study by Entrialgo et al.^[13] locus of control, need for achievement and tolerance for ambiguity are regarded as the determinants of the tendency for entrepreneurship. In the study by Stewart et al.^[45], need for achievement, risk taking propensity, and innovation have been used as determinants for distinguishing “entrepreneurs” from “corporate managers” and small business owners. In this study six personality characteristics are used to define the entrepreneurial profile of students including need for achievement, locus of control, risk taking propensity, tolerance for ambiguity, innovativeness and self-confidence.

Capabilities of practicing entrepreneurs considerably differ by location and age, but are not discriminated by gender, number of years in service, and product type. A major pattern found in the Global Entrepreneurship Monitor (GEM) is that men are on average more than twice as active in entrepreneurship as women^[41,36]. Delmar and Davidsson^[10] found that gender is a strong predictor of nascent entrepreneurship at the micro-level, with men being more likely to have the intention to entrepreneurship than women. According to study of Galbraith^[15] women have less risk taking capability than men. Friedrich et al.^[14] reported on the findings of McClelland’s Achievement Motivation training of small business conducted in India and in the USA in 1969. In this research five properties, achievement motivation^[24,34,35,4,19,44,28], Risk taking^[33,20], creativity^[11,47,8,37], Independence^[5,50] and internal control^[51,38,21,17,26,1948,37] have attracted more attention. According to recently done researches^[22,32], promoting these properties will result in entrepreneurship capabilities advancement. this study attempts to describe and analyze the psychological capabilities affecting agricultural students' Entrepreneurship level through focusing on the 5 aforementioned (Achievement, Risk taking, Creativity,

Independence and Internal control) characteristics, between all agricultural students of B.Sc, M.Sc and PhD university of Tehran.

Purpose and Objectives: The main purpose of this study was to assess and compare agricultural students' psychological capabilities affecting entrepreneurship level.

The specific objectives of the study were to:

- Describe personal characteristics of respondents
- Measure and compare entrepreneurship capabilities of students at different educational levels (B.Sc, M.Sc and PhD).
- Compare entrepreneurship capabilities between students who passed educational courses aimed at promoting students' entrepreneurship and students who did not passed such courses.
- Compare entrepreneurship capabilities between students with/without entrepreneurship experience.
- Compare entrepreneurship capabilities of students by sex.

MATERIALS AND METHODS

The statistical population of the study consisted of 2200 students who were studying at B.Sc, M.Sc and PhD levels in the College of Agriculture, University of Tehran. Using proportional stratified random sampling, 250 students were selected. To collect data, a structured questionnaire was used. The questionnaire consisted of standardized tests of Hans risk taking (with 10 items), Torrance creativity (with 10 items), Ratter internal control (with 10 items), Bahargava achievement motivation (with 12 items) and Hisreach independency (with 12 items)^[24,20,4,15,22].

To compare entrepreneurship capabilities between students who had entrepreneurship experience and students who had not such experience, some items added to the questionnaire including having experience in making an invention, entrepreneurship proposals, membership in entrepreneurship cooperatives, membership in small and medium- sized entrepreneurship enterprises, economical activities related to entrepreneurship and so forth.

To determine the validity of the questionnaire, content validity was established. The content validity of the questionnaire was obtained using a panel of faculty members and a multi-step correction and review process. Earlier, a pilot study was conducted using 30 students. As shown in Table 1, Cronbach's alpha computed to measure reliability of the “entrepreneurship capabilities index” was 0.82; indicating that index has high reliability. In this research, descriptive and inferential statistics were used to analyze collected data. Descriptive statistics were

Table 1: Reliability coefficients for the used scales in the study

scale	Number of items	Items dropped	Cronbach alpha
Achievement motivation	1-10	10	0.82
Internal control	10-20	10	0.74
Risk taking	20-30	10	0.85
Independence	30-42	12	0.77
Creativity	42-54	12	0.81
Total alpha=0.82			

included frequencies, percentage, mean and standard deviation and inferential statistics were included analysis of variance (F test) and (t test).

RESULTS AND DISCUSSIONS

Characteristics of the Respondents: As shown in Table 2 the sample used in the present study were 130(52 %) B.Sc, 75(30 %) M.Sc, and 45(18 %) PhD students. Of respondents, 17.2 percent were studying Agronomy and plant breeding, 11.2 percent Animal Science, 12.2 Irrigation and Drainage, 8 percent Food Science and Industries, 16.8 percent Horticulture, 10.8 percent Extension education, 12 percent Soil science, 6 percent Plant Pathology, and 4.8 percent Agricultural Machineries.

Respondents' Entrepreneurship Capability at Different Levels of Education: Comparison of students at different levels (B.Sc., M.Sc. and PhD level) on entrepreneurship capabilities level; indicate no significant difference among students on entrepreneurship capabilities level(see Table 3).

Respondents' Entrepreneurship Capability and Entrepreneurship Education Courses: 86.4 percent (216) of respondents had not passed any entrepreneurship education courses and only 6.4 percent (16) of respondents had passed one course or more than one course (7%; 18). As Table 4 shows; there were no significant differences between respondents who had passed *entrepreneurship education courses* and respondents who had not passed such courses on all of the entrepreneurship capabilities level

Comparison of Respondents' Entrepreneurship Capability by Sex: Comparison of respondents' entrepreneurship capability level on sex; indicate significant differences between female and male students on risk taking ability, achievement motivation, and creativity. On the other hands, there were no significant differences among respondents on internal

control and independence (see Table 5). In other words, this comparison revealed that female students had higher risk taking ability and Achievement motivation than their male counterparts. This finding is inconsistent with previous studies^[15]. Meanwhile, male students had higher creativity level than their female counterparts.

Comparison of Undergraduate Students' Entrepreneurship Capability Level by Sex: Table 6 shows that female students had higher risk taking ability than male students. In addition, in the 4 remaining entrepreneurship capability levels, there were no significant differences between male and female students at bachelor level.

Comparison of M.Sc Students' Entrepreneurship Capability Level by Sex: According to table 7, female students had higher risk taking ability than male students. Meanwhile, male students had higher creativity level than their female counterparts. In addition, in the 3 remaining entrepreneurship capability levels, there were no significant differences between male and female students at master level (see Table 7).

Comparison of PhD Students' Entrepreneurship Capability Level by Sex: Table 8 presents; male students had higher achievement motivation ability than female students. Moreover, in the 4 remaining entrepreneurship capability levels, there were no significant differences between male and female students at master level.

Respondents' Entrepreneurship Capability and Entrepreneurship Experience: 74.4 percent (186) of respondents had not any entrepreneurship experience and 25.6 percent (64) had one or more experience in entrepreneurship activities. Table 9 indicates; there were significant differences between students who had entrepreneurship experience and students who had not such experience on all of the 5 psychological capabilities affecting entrepreneurship level except creativity capability.

Table 2: Frequency and frequency percentage of respondents

Level of education	Sex	Frequency	Percentage
B.Sc			
	Male	85	66
	Female	45	34
	Total	130	100
M.Sc			
	Male	35	47
	Female	40	53
	Total	75	100
PhD			
	Male	13	28
	Female	32	72
	Total	45	100

Table 3: Entrepreneurship capability of respondents by level of education

Entrepreneurship capabilities	Educational levels	F - test value	Sig.
Achievement motivation			
	B.Sc	1.035	0.31
	M.Sc		
	PhD		
Internal control			
	B.Sc	0.416	0.52
	M.Sc		
	PhD		
Risk taking			
	B.Sc	0.149	0.70
	M.Sc		
	PhD		
Independence			
	B.Sc	1.630	0.20
	M.Sc		
	PhD		
Creativity			
	B.Sc	0.019	0.89
	M.Sc		
	PhD		

Table 4: Entrepreneurship capabilities between students who passed and not passed entrepreneurship educational courses

Entrepreneurship capabilities	entrepreneurship education courses	Mean	Standard deviation	t- test value
Achievement motivation	Not passed	35.70	1.002	2.111
	passed1 course or more	37.34	0.923	
Internal control	Not passed	41.22	0.945	-1.231
	passed1 course or more	43.46	0.864	
Risk taking	Not passed	41.12	0.866	-2.773
	passed1 course or more	38.74	1.055	
Independence	Not passed	46.56	0.933	2.112
	passed1 course or more	50.42	0.726	
Creativity	Not passed	48.22	0.812	0.852
	passed1 course or more	51.58	0.870	

Comparison of Respondents' entrepreneurship capability by sex

Table 5: Comparison of Respondents' entrepreneurship capability by sex

Entrepreneurship capabilities	Sex	Mean	Standard deviation	t- test value
Achievement motivation	Male	37.10	5.101	- 1.101**
	Female	38.00	3.962	
Internal control	Male	37.08	8.686	3.769
	Female	32.52	8.082	
Risk taking	Male	41.52	5.883	-3.241**
	Female	44.28	4.133	
Independence	Male	45.32	8.361	3.654
	Female	40.28	7.918	
Creativity	Male	41.54	6.705	4.355*
	Female	36.22	5.631	

* Significant at $P > 0.05$

** Significant at $P > 0.01$

Table 6: Comparison of entrepreneurship capability level among undergraduate students by sex (B.Sc)

Entrepreneurship capabilities	Sex	Mean	Standard deviation	t- test value
Achievement motivation				
	Male	35.70	0.970	-2.330
	Female	37.00	0.989	
Internal control				
	Male	44.52	1.080	-1.380
	Female	46.32	0.964	
Risk taking				
	Male	39.12	0.895	-2.773**
	Female	42.12	0.855	
Independence				
	Male	49.56	0.933	-1.003
	Female	35.28	0.910	
Creativity				
	Male	49.28	0.806	-0.185
	Female	49.56	0.840	

** Significant at $P > 0.01$

Table 7: Comparison of entrepreneurship capability of male and female students)M.Sc(

Entrepreneurship capabilities	Gender	Mean	Standard deviation	t- test value
Achievement motivation				
	Male	35.90	0.649	0.563
	Female	34.60	0.596	
Internal control				
	Male	45.00	0.564	-0.525
	Female	45.72	0.528	
Risk taking				
	Male	38.04	0.725	-1.550**
	Female	40.68	0.354	
Independence				
	Male	46.44	0.606	-0.901
	Female	47.76	0.495	
Creativity				
	Male	48.72	0.643	0.758*
	Female	47.18	0.454	

* Significant at $P > 0.05$

** Significant at $P > 0.01$

Table 8: Comparison of entrepreneurship capabilities of male and female students (PhD)

Entrepreneurship capabilities	Gender	Mean	Standard deviation	t- test values
Achievement motivation				
	Male*	37.60	0.680	-0.742**
	female	35.90	0.657	
Internal control				
	Male	44.76	0.755	0.413
	Female	43.56	0.622	
Risk taking				
	Male	38.64	0.524	-0.222
	female	39.24	0.516	
Independence				
	Male	48.48	0.589	-0.249
	Female	49.02	0.567	
Creativity				
	Male	47.74	0.483	-0.227
	female	48.16	0.412	

* Because male students (PhD) were less than 30, at first, a one-sample Kolmogorov-Smirnov test was done to decide whether the data belong to a normal distribution. Results showed that the sample was from a normal distribution, and then t test was used.

** Significant at $P < 0.01$

Table 9: Comparison of students' entrepreneurship capability level by entrepreneurship experience

Entrepreneurship capabilities	Entrepreneurship experience	Mean	Standard deviation	t- value
Achievement motivation				
	One experience	37.55	1.002	-0.375**
	With one experience or more	37.83	0.923	
Internal control				
	One experience	27.82	0.945	-4.144**
	With one experience or more	33.38	0.864	
Risk taking				
	One experience	35.41	0.866	-1.937**
	With one experience or more	37.04	1.055	
Independence				
	One experience	42.06	0.933	-1.199*
	With one experience or more	44.67	0.726	
Creativity				
	One experience	38.50	0.812	0.232
	With one experience or more	38.21	0.870	

With one experience or more* Significant at $P > 0.05$

** Significant at $P > 0.01$

Conclusion: It is not surprisingly to expect higher levels of entrepreneurship capabilities from students in the higher levels^[10,9], but this study revealed that level of education and various university courses did not increase level of agricultural students' entrepreneurship

capability (this is in line with the study conducted by Reynaldo^[40]).

The economic, social and political instability in the country may lead students to prefer salaried jobs in public or private sectors instead of running their own

business. It seems this tendency also is observed amongst the agricultural students. In addition, lack of sufficient incentives toward entrepreneurship and lack of sound entrepreneurship education hamper the development of any entrepreneurial vision of students, So it seems for the appearing entrepreneurship capabilities among the agricultural students, we need to basic review in content of the present courses, teaching methods, more cooperation among university and “entrepreneurship training center” (ETC), and entrepreneurship oriented education programs in all the agricultural courses. Also University level courses should support students in learning the entrepreneurship concepts and putting them into practice, foster entrepreneurial behavior and encourage reflection in order to improve individual performance^[12]. According to this perspective the entrepreneurship courses will be a part of a more comprehensive academic project. So, it seems, Purposeful visits from successful entrepreneur projects will increase growth of entrepreneurship capabilities.

Comparison of psychological capabilities affecting entrepreneurship among agricultural students of Tehran University showed all of the 5 psychological capabilities were significantly different between students who had entrepreneurship experience and students who had not such experience except creativity capability. (This is inconsistent with studies conducted by Rissal^[42]; Postigo and Howard^[39]). Therefore it seems this college's curriculum and assignments were not oriented towards reinforcement of creativity capability of students. Perhaps one reason for explaining this finding can be because the university's scientific board members had traditional attitudes toward teaching and education they could not stimulate and reinforce creativity in their students. Hence it is recommended modifying scientific board members' attitudes toward employing more exploratory teaching and problem solving methods.

On contrary to previous studies^[15]; this study revealed that female students of Agricultural College had higher levels of risk taking and Achievement motivation abilities compared to male students counterparts. to explain this finding, we can say because women entrepreneurship capability (and perhaps female students) is closely related to the general framework conditions for entrepreneurship in specific economy and society culture^[49]; and in addition, of most important factors for decreasing women entrepreneurship capabilities are to increase unemployment rate and to decrease job security for women compared to men, so it seems society social situations affecting women relating to nascent entrepreneurship had influenced female students' entrepreneurship capabilities levels. In other words,

female student know they will not have favorite job opportunity, therefore they have tried to improve their entrepreneurship capabilities to escape from their graduates' counterparts (women) destiny.

So accomplish entrepreneurship training workshops and to get familiar with women self-employment strategies, training of courses relating to production of commercial products and seminars holding in related to present situations of self-employment and agricultural loans are effective on growth of female students' entrepreneurship capabilities. So it is recommended that higher education authorities seek to nurture and develop the entrepreneurial characteristics discussed in this study in all agricultural students.

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