

# Developing children's non-cognitive skills by early entrepreneurship education

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**Abstract.** This research aims to explore the influence of early entrepreneurial education on cognitive and non-cognitive abilities of male sixth-grade primary school pupils using a randomized pretest-posttest control group design. A total of 45 students were randomly allocated to experimental, active-control, and control groups using a multi-stage random selection procedure. The experimental group was taught entrepreneurship using the Bizworld entrepreneurship education package. The active control group did not get entrepreneurship education but was instructed on a non-entrepreneurship-related issue (hygiene). The Control group received no instruction. The findings revealed that early entrepreneurial education skills impacted non-cognitive abilities (such as risk-taking propensity, creativity, self-efficacy, persistence, and need for achievement). Early entrepreneurship education seems to be an effective technique for developing children's non-cognitive abilities in the late years of primary school. As a result, entrepreneurship education may be taught in primary schools, emphasizing the development of non-cognitive abilities, which will affect children's individual, educational, social, and vocational futures and can have long-term advantages for students, families, and society.

**Keywords:** bizworld; creativity; early entrepreneurship education; non-cognitive skills; self-efficacy

## 1. Introduction

Many social and economic problems and difficulties drive from defects in the acquisition and development of skills. Defect in the skill acquisition started and continued in early life would lead to inequality and low efficiency in people (Qasem *et al.* 2018, Ji *et al.* 2020, Choi *et al.* 2021, Hu *et al.* 2021, Yan *et al.* 2021). On the other hand, to acquiring and developing different skills there is a sensitive and critical period (Heckman 2011). Critical period is a course that during this age investment is only effective in the limited period of time. If in this period, people do not receive proper stimulation, development of some special executives in the next periods of life would be difficult or impossible (Coneus *et al.* 2012).

But in this sensitive period, there is an opportunity to acquire special skills, the opportunity that would not exist in the next course of life with the same quality. Therefore, early years of life is a sensitive period for developing human resources (cognitive and non-cognitive skills) and has an important role in the optimal timing of investment and legislating educational policies (Reuß *et al.* 2010). This stage according to interdisciplinary studies is consistent with technology of skill formation. In the technology of skill formation model that was proposed by Cunha and Heckman (2007), emphasis is on the importance of early investments in acquiring cognitive and non-cognitive skills (Huber *et al.* 2014). According to this model, skills developed in this stage increase the possibility of achieving skills in

the next stages. This effect is named self-production and it includes this idea that acquiring skills continues in any stage to next stages. Furthermore, skill formation is a dynamic complementarity process, which means that skill created in this stage increases the utility and efficiency of investment in the next stages. Human skills had different natures and can be categorized from pure cognitive to non-cognitive (Cunha and Heckman 2007).

Cognitive skills include conscious intellectual endeavor such as thinking, reasoning or remembering, while non-cognitive skills or personality characteristics involve skills like motivation and interpersonal interaction. Although it is possible that non-cognitive skills also involve thinking effort, this thinking effort is not consciously and direct compared to cognitive skills (Yan *et al.* 2020, Chen *et al.* 2021, John 2022, Shi *et al.* 2022). Nevertheless, contrast between cognitive and non-cognitive features caused lots of confusion, because, few aspects of human behavior are without any cognitive and many of personality aspects are affected by cognitive processes. Distinction between cognitive and non-cognitive skills does not mean that personality features are free from elements of cognitive processing and inverse (Borghans *et al.* 2008) As well, assessment of cognitive skills or personality features that have been used as main component of concept of emotional intelligence by social psychologists and human resource management specialists, are different (Brunello and Schlotter 2011). In many studies, and even about Big Five personality traits that have been used widely, there isn't also global agreement (Heckman and Kautz 2012).

Cognitive skills are one of the important and necessary aspects for progress and success in life but it is not enough for performance in social life and in order to achieve success in job market and education, non-cognitive skills

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are significant also (Cunha *et al.* 2006). The importance of cognitive skills for socio-economic successes in many studies approved but a collection of emerging research have given a parallel importance for non-cognitive skills (Cunha *et al.* 2010). So that mentioned, non-cognitive skills as compare with cognitive skills have importance and even more important than them in determination of educational and work consequence (Rosen *et al.* 2010). Non-cognitive skills are acquired from participating in sport activities, dramatic etc. (Kang and Lee 2015). But one of the programs used to develop and improve non-cognitive skills in Europe is entrepreneurship classes and entrepreneurship education (Brunello and Schlotter 2011). In addition, the focus on developing cognitive skills in the entrepreneurship education domain is so strong. Because, methods and activities are used in entrepreneurship education lead to developing these skills (Moberg 2014). Hence, early 60s entrepreneurship researchers became interested in identifying non-cognitive skills related to entrepreneurship. Based on current literature, 9 non-cognitive skills related to entrepreneurial achievement were identified that includes creativity, self-efficacy, need for achievement, risk taking propensity, social orientation, pro-activity, persistence, analyzing and motivating (Huber *et al.* 2014).

In entrepreneurship education programs, learning activities are designed in a way which creates creative thinking and activity (Barakat *et al.* 2014). Moreover, based on Bandura's social cognitive theory, entrepreneurship education can enhance self-efficacy (Shinnar *et al.* 2014). The results of studies also indicate the effect of entrepreneurship education on this skill (Hassi 2016). On the other hand, attending in entrepreneurship education classes led to the acquisition of skills like motivation, creativity and pro-activity (Brunello and Schlotter 2011). Furthermore, entrepreneurship education has been impressive in tending to need for achievement, risk taking propensity, pro-activity, persistence and analyzing has led to the improvement of these skills (Huber *et al.* 2014). Therefore, it can be stated that entrepreneurship education develops non-cognitive skills related to entrepreneurship (Elert *et al.* 2015). It should be noted that in addition to cognitive skills, non-cognitive skills including entrepreneurship knowledge is also crucial to entrepreneurship achievement. Furthermore, the relation between entrepreneurship knowledge and entrepreneurial success positively evaluated (Huber *et al.* 2014) and the results indicated entrepreneurship education had a crucial role in entrepreneurial knowledge development (Haase and Lautenschläger 2011). As well, among other elements and components affected by entrepreneurship education, can mention to entrepreneurial intention (Shinnar *et al.* 2014). Numerous studies at the university level showed that entrepreneurship education had a positive effect on students' entrepreneurial intention (Moberg 2014). However, only a few studies performed in the lower levels of the educational system in the world. The results showed the effect of entrepreneurship education has not been positive on students' entrepreneurial intention (Haase and Lautenschläger 2011, Huber *et al.* 2014). In general, in the comprehensive review of the present literature, study in the field of entrepreneur-

ship education has been researched in adolescence and at the university level. Lack of attention to entrepreneurship education at the elementary school level is a global issue (Hassi 2016). Therefore, considering the importance of childhood years in learning of cognitive and non-cognitive skills and that acquisition of these skills and their reinforcement in these ages would be a base for learning. Furthermore, consolidation these skills and development and growth of the skills can be effective on the path of the future of children education and career. The aim of current study is to survey this question, is early entrepreneurship education effective on cognitive and non-cognitive skills of male sixth-grade primary school students?

To achieve this goal, BizWorld entrepreneurship education program (4<sup>th</sup> version) was used. The BizWorld is a specific entrepreneurship program for elementary schools. This program was designed by Tim Draper, Founder of Bizworld Institute, for children in grades 3-8. In BizWorld program, children learn business principles, entrepreneurial process, teamwork, partnership, communication skills and leadership practically and based on different activities and tasks.

Brüne and Lutz (2020) systematically reviewed 21 articles to study the long- and short-term effects of entrepreneurship education in schools on entrepreneurial outcomes and they found the effects of entrepreneurship education in schools were very sensitive to age and gender. Entrepreneurship education had a negative impact on entrepreneurial outcomes for female and older people in contrast to male and younger people. Dharmawati *et al.* (2020) surveyed the improvement of recycling skill, aspects of knowledge and aspects of attitudes of students in three elementary schools by using the entrepreneurship education model. The findings suggested the entrepreneurship education model can increase recycling skill, entrepreneurial knowledge and attitude aspects in elementary students. Therefore, the entrepreneurship education model can be a substitute to develop entrepreneurship education in elementary schools. Saptono *et al.* (2021) examined the impact of entrepreneurship education and the outdoor learning environment on entrepreneurial self-efficacy in 320 Indonesia's elementary school students that contributed to the study. Results indicated that the outdoor learning environment nearly correlated to entrepreneurial self-efficacy and entrepreneurship education. Primary education has a remarkable role in the growth of self-efficacy. Rosendahl Huber *et al.* (2020) conducted a randomized field experiment aimed to investigate the best way to combine key cognitive skills in entrepreneurial teams by using Bizworld entrepreneurship education program for this purpose. Four diverse groups formed which differ in terms of their cognitive skill composition. The findings indicated balanced skills are advantageous for a team's risky performance only if it comes from within-person skill balance, and that combining team member with distinct skills in mixed groups does not compensate for an absence of members who individually possess balanced cognitive skills. Sánchez (2013) used an entrepreneurship education (EE) program on entrepreneurial competencies and intention of secondary students in the form of pre and post tests to

Table 1 Pretest-posttest control group design

Posttest	Intervention	Pretest	Assignment	Groups
T <sub>2</sub>	X <sub>1</sub>	T <sub>1</sub>	R	experimental
T <sub>2</sub>	X <sub>2</sub>	T <sub>1</sub>	R	active-control
T <sub>2</sub>	-	T <sub>1</sub>	R	control

R: random assignment, T<sub>1</sub>: pretest, T<sub>2</sub>: posttest, X<sub>1</sub>: main intervention (Bizworld), X<sub>2</sub>: intervention in active-control group (hygiene)

show that whether, entrepreneurial education increases the entrepreneurial intention or not. The finding revealed that entrepreneurial education elevated their competencies and intention. Hardie *et al.* (2020) reviewed the literature of entrepreneurship education to understand the rising evidence of efficiency of programs that help students to take action on social, economic and environmental opportunities. The findings of 45 articles across nine countries showed that although these types of learning opportunities exist in school curriculum but students seldom experience this type of learning in their schools. Efficient methods to encourage students to be environmentally friendly were assistance from external trainers and value creation throughout schooling. Teachers also need to create knowledge and confidence to grow capable entrepreneurship education learning experiences that are related to today's students' future life challenges.

In reviewing the research background, it was found that most of the studies in the field of entrepreneurship education have been done at the university level and on students, some of which are mentioned below:

Oguntimehin and Oyejoke (2018) examined the relationship between entrepreneurship education and the entrepreneurial intent of students in Nigeria. They concluded entrepreneurship education has a positive effect on students' entrepreneurial intentions. The findings of Maresch *et al.* (2016) study indicated that entrepreneurship education had an impact on entrepreneurial intent of science and engineering students. Karimi *et al.* (2016) investigated the effect of entrepreneurship education on identifying the entrepreneurial opportunity and entrepreneurial intention of Iranian students. The results showed that voluntary entrepreneurship education programs had a positive effect on students' entrepreneurial intentions. In this regard, the results of Din *et al.* (2016) revealed entrepreneurship education programs were effective in promoting students' entrepreneurial skills, such as risk taking and self-efficacy. Regarding the impact of entrepreneurship education in primary schools, very few studies have been conducted in the world at this level (Huber *et al.* 2014, Hassi 2016). The results of the study by Hassi (2016) showed that late childhood (11-12 years old) is a good time to develop non-cognitive skills like self-efficacy. In this study, early entrepreneurship education had no effect on students' risk-taking and entrepreneurial intent.

In addition, the results of the study by Huber *et al.* (2014) indicated that early entrepreneurship education at the age of 11-12 years had a strong effect on non-cognitive skills such as risk taking, creativity, need for success, self-efficacy, pro-activity, persistence and analysis, but had no

effect on entrepreneurial knowledge and entrepreneurial intention. They claimed in this age range, entrepreneurship education has the greatest impact on important non-cognitive skills related to entrepreneurial activities.

## 2. Mathematical modeling and formulation

### 2.1 Sample

The statistical population of this study was included all male students in the sixth grade of primary schools in Ahvaz city (southwest of Iran). 45 students were selected as a sample using multi-stage random sampling method and randomly assigned to experimental group (15 people), active-control group (15 people) and control group (15 people). It is worth mentioning one of the students of the experimental group resigned from the third session of the educational intervention and the statistical sample decreased to 44 people.

### 2.2 Procedure and design

This study is a randomized pretest-posttest control group design (Table 1) that aims to investigate the effect of early entrepreneurship education on cognitive and non-cognitive skills of male sixth-grade primary school students in Ahvaz city. Prior to the intervention, students of experimental, active-control and control groups responded to the research questionnaires (pretest). Then educational intervention was conducted using Bizworld program to experimental group for 13 sessions (2 days a week and about 60 minutes every day). Active control group did not receive entrepreneurship education, but trained in an unrelated topic to entrepreneurship (hygiene). Control group did not receive any training. Control group did not receive any training. After intervention, students of three groups responded to the questionnaires (posttest).

### 2.3 Measures

#### 2.3.1 Combined version of Huber *et al.* self-assessment test (2014)

The test has 27 items to measure non-cognitive skills (3 items for measuring each skill). All items are answered using a seven-point scale ranging from 1 to 7 (from 1 = totally disagree to 7 = totally agree). The original version of the test had 4 items for measuring each non-cognitive skill. We added the fourth item to increase the reliability of the test. In other words, we used the combined version of Huber *et al.* Self-Assessment Test. It has 36 items on a seven-point scale. Huber *et al.* (2014) used principal component analysis and Cronbach's  $\alpha$  to measure the validity and reliability of the test. In current study, we used confirmatory factor analysis method (by AMOS software) to measure the validity of the combined version of test. The results indicated out of 36 items 34 ones had an acceptable standardized coefficient (factor loading), but 2 items had not an acceptable factor loading and they were removed (1 item of creativity subscale and 1 item of need for

Table 2 The mean and standard deviations of the variables

Variables	Groups	Stages			
		Pre-test		Post-test	
		Mean	SD	Mean	SD
risk taking propensity	experimental	3.46	0.944	4.69	0.926
	active control	3.55	1.040	3.66	0.777
	control	3.31	0.809	3.33	0.729
creativity	experimental	3.85	1.285	5.57	1.049
	active control	4.15	1.180	4.62	0.990
	control	4.13	1.258	3.82	1.132
need for achievement	experimental	4.19	1.181	5.39	1.254
	active control	4.20	1.125	4.26	1.010
	control	4.35	1.130	4.21	0.999
self-efficacy	experimental	5.05	1.544	5.33	0.948
	active control	5.01	0.690	3.63	0.929
	control	4.58	0.952	4.61	0.791
social orientation	experimental	4.25	1.051	5.16	0.948
	active control	3.86	1.245	4.16	0.929
	control	4.46	1.235	4.45	0.791
pro-activity	experimental	4.57	0.873	5.17	1.025
	active control	4.45	0.733	4.13	1.439
	control	4.36	0.828	4.41	1.020
persistence	experimental	3.35	0.847	4.21	0.526
	active control	3.30	1.031	3.26	0.947
	control	3.31	0.856	3.38	1.034
analyzing	experimental	4.42	1.106	5.23	0.890
	active control	4.53	1.357	4.78	11.149
	control	4.60	1.025	4.33	0.704
motivating	experimental	4.94	0.951	5.55	0.754
	active control	4.78	0.958	4.33	1.182
	control	5.21	1.003	4.55	1.098
entrepreneurial intention	experimental	3.64	0.949	3.73	0.932
	active control	3.71	0.900	3.45	0.786
	control	3.50	0.944	3.38	0.687
entrepreneurship knowledge	experimental	0.56	0.234	0.57	0.112
	active control	0.53	0.261	0.50	0.263
	control	0.54	0.223	0.53	0.277

Table 3 The results of the multivariate analysis of covariance

	Value	F	Hypothesis df	Error df	Sig.
Pillai's trace	1.206	2.902	22	42	0.001
Wilks' lambda	0.111	6.637	22	40	0.0001
Hotelling's trace	5.142	4.441	22	38	0.0001
Roy's largest root	4.509	8.607	11	21	0.0001

achievement subscale). Furthermore, Cronbach's  $\alpha$  coefficients for risk taking propensity, creativity, need for achievement, self-efficacy, social orientation, pro-activity,

persistence, analyzing and motivating subscales were 0.68, 0.64, 0.74, 0.71, 0.77, 0.59, 0.62, 0.54, and 0.77 respectively (Azizi *et al.* 2017).

### 2.3.2 Huber *et al.* entrepreneurship knowledge test (2014)

The test has 10 multiple choice questions that is used to measure entrepreneurship knowledge. Out of 10 questions 4 questions are used in both pretest and posttest, 3 questions are used in pretest and 3 questions are used in posttest. Therefore, entrepreneurship knowledge measured using 7 multiple choice questions in pretest and posttest. In current study, content validity of the test was confirmed by a panel of experts (5 experts in the field of entrepreneurship education). Furthermore, test-retest method was also used to measure the reliability of the test. Correlation coefficient between two measurements was acceptable (0.73).

### 2.3.3 Linan entrepreneurial intention questionnaire (2008)

The questionnaire has 6 items. All item is answered using a five-point Likert scale ranging from 1 to 5 (from 1 = totally agree to 5 = totally disagree). In current study, confirmatory factor analysis method (by AMOS software) was used to measure the validity of the questionnaire. Results indicated out of 6 items 4 ones had an acceptable factor loading, but 2 items did not have an acceptable factor loading and were removed. Furthermore, Cronbach's  $\alpha$  method was used to measure the reliability of the questionnaire and the reliability coefficient was acceptable (0.75).

### 2.3.4 Data analysis

Data analysis was performed by SPSS 23 and AMOS. Confirmatory factor analysis and Cronbach's alpha method were used to measure the validity and reliability of the measures. Descriptive statistics include mean and standard deviation and inferential statistics include multivariate analysis of covariance (MANCOVA) were also used.

## 3. Methodology and solving procedure

In Table 2, the mean and standard deviation of the variables (including risk taking propensity, creativity, need for achievement, self-efficacy, social orientation, pro-activity, persistence, motivating, entrepreneurial intent and entrepreneurial knowledge) in pretest and posttest in experimental, active-control and control groups were reported.

To analysis the effect of early entrepreneurship education on cognitive and non-cognitive skills, a multivariate analysis of covariance was used. Before testing the hypotheses, first, the important assumptions of multivariate analysis of covariance (including linearity, multi-co-linearity, homogeneity of variance and homogeneity of regression) was examined and the results displayed data estimate the assumptions of multivariate analysis of covariance. The results of multivariate analysis of covariance presented in Table 3 revealed there were significant differences between groups in at least one of the dependent variables.

Then, to be exactly determined the effect of early entrepreneurship education has a significant difference in

which of the studied variables, the results of one-way analysis of covariance were examined (Table 4).

The results showed there were significant differences between the experimental and active-control groups in risk taking propensity, creativity, need for achievement, self-efficacy, social orientation, persistence, analyzing and motivating. In other words, early entrepreneurship education had an impact on increasing risk taking propensity, creativity, need for achievement, self-efficacy, social orientation, persistence, analyzing and motivating but it had no effect on the pro-activity, entrepreneurial intent and entrepreneurial knowledge of the students.

Finally, Bonferroni post hoc tests were used to determine the significant differences between the experimental, active-control and control groups in the variables. The results are presented in Table 5.

## 4. Big data analysis

The aim of this study was to investigate the effect of early entrepreneurship education on cognitive and non-cognitive skills of sixth grade male students in primary schools. Our findings indicated early entrepreneurship education had a positive effect on self-efficacy, need for achievement, creativity, risk taking propensity, social orientation, persistence, motivation and analysis but had no effect on students' entrepreneurial intent, entrepreneurial knowledge and pro-activity. In other words, early entrepreneurship education affected the non-cognitive skills. Some of the results are similar to (Huber *et al.* 2014, Hassi 2016) results. In the first study, entrepreneurship education had effect on non-cognitive skills (including self-efficacy, need for achievement, creativity, risk taking, social orientation, persistence and analyzing) but had no effect on students' entrepreneurial intent, entrepreneurial knowledge. In the second, early entrepreneurship education had positive impact on self-efficacy but had no any impact on their risk taking and entrepreneurial intent.

We believe that students, who had participated in Bizworld education program, became familiar with the concept of risk, correctly understood risk taking and experienced consequences related to risk taking such as success and failure. Thus, the program improved their capability and potential for risk taking.

As well, Bizworld program developed and increased students' creativity by providing them rich learning experiences and opportunities. In other words, it provided an opportunity for students not only to be able to experience the process of creative destruction, but also provided many opportunities for them to improve their creativity. It seems that creativity is a learned skill and its development requires readiness, appropriate environment and practice. Bizworld program provided requirements for students and increased their creativity.

As well, tasks and activities implemented during the Bizworld program in a way that students gradually became familiar with their abilities and capabilities. They used these abilities and capabilities in solving progressive tasks and challenges. They also experienced successes and failures in

Table 4 The results of one-way analysis of covariance

Dependent variable	Sum of squares	Df	Mean square	F	Sig.	Partial Eta squared
risk taking propensity	15.789	2	7.894	15.663	0.0001	0.511
creativity	23.549	2	11.775	11.909	0.0001	0.443
need for achievement	9.746	2	4.882	6.143	0.006	0.291
self-efficacy	15.575	2	7.787	8.114	0.002	0.351
social orientation	6.387	2	3.194	4.844	0.015	0.244
pro-activity	5.320	2	2.660	3.039	0.063	0.168
persistence	7.297	2	3.684	5.499	0.009	0.268
analyzing	8.317	2	4.158	10.767	0.0001	0.418
motivating	15.056	2	7.528	12.399	0.0001	0.453
entrepreneurial intention	0.827	2	0.414	2.502	0.099	0.143
entrepreneurship knowledge	0.017	2	0.009	0.326	0.724	0.021

different stages of the program. In addition, students are encouraged and motivated for the need to succeed. Therefore, Bizworld program was the agent of creation or development of the need to succeed in students. In addition, students worked as a team and learned to listen to the idea of others, present their idea, help others, ask for help and seek solutions to solve their problems and tasks. They actively and cooperatively worked together and acquired new perceptions and learning. Consequently, a group culture was created in which students understood group members work together to help and support each other's effort. This sense of group solidarity increased students' motivation and need for personal and group achievement.

In Bizworld program, students were conducting different tasks and activities. They gradually acquired more complete understanding of their abilities, skills and capabilities and came to believe they have abilities in some areas. As well, while students were performing various tasks and activities during training sessions they received positive feedbacks indicating proper and desirable performance that leading to increase their self-confidence and self-efficacy. Moreover, observing teammates or groups members who successfully completed their tasks, was another important source for improving self-efficacy. According to Bandura's social learning theory, when people observe the others, who are similar to themselves, successfully doing their tasks, come to believe in their own ability to succeed in similar tasks.

There were many opportunities to communicate and interact in different tasks during the Bizworld program. Meanwhile, students were doing tasks and activities. They experienced behaviors including collaboration with group members, participating in decision making and group activities, helping group members, communicating with teammates, investors and buyers, these lead to improving their communication skills and social interaction or social orientation.

As well, students in various levels of the program realized a direct relationship between effort and success. They not only understood the relationship and continued their activity despite of obstacles and problems leads to success but also observed this relationship in other groups.

As a result, they continued their effort and the skill of persistence increased in them.

Students during the program experienced different positions and situations to make decisions and solve problems. Decision making and problem solving requires analyzing skills. Thus, students who involved in decision-making and problem-solving processes in different positions need to use analyzing skills. For this reason, their analyzing skill increased.

In addition, students in their own groups had various roles (such as production manager, financial manager, sales manager, etc.) and they experienced team working. On the other hand, the members of the group simultaneously played the role of leader and follower and experienced two types of interaction and social communication in these two roles. Therefore, students as leaders led the rest of the group for doing their duties and experienced the ability to encouragement and stimulation of other group members in order to doing their tasks and activities, as well as a follower, had specific social interactions and relationships with the leader and other group members. As a result, their ability to persuading and motivating grew.

Bizworld program provided opportunities for students to actively explore, work, make decisions and be responsible, but it had no effect on students' pro-activity. It seems that developing and increasing students' pro-activity was not possible in a short time during the Bizworld program. Therefore, developing this skill requires more time.

In addition, it's seems that more concentration of entrepreneurship education in this age (elementary school) is to develop abilities and skills especially non-cognitive skills. On the other hand, students in this age have a long way to employment and labor market, therefore, early entrepreneurship education had no effect on entrepreneurial intent and entrepreneurial knowledge as a cognitive skill.

Due to the effectiveness of early entrepreneurship education in improving and enhancing non-cognitive skills and also the importance and role of these skills in the future life of students (personal, educational and professional), *it's recommend* that educational and curriculum planners pay more attention to the benefits of entrepreneurship education in curriculum of elementary school students.

Table 5 Bonferroni post hoc test results for comparing estimated marginal means of variables

Variables	Groups	Mean	Mean Difference	Std. error	Sig.
risk taking propensity	experimental- active control	3.73 – 4.75	1.02	0.273	0.002
	experimental- control	3.21 – 4.75	1.54	0.286	0.0001
	active control- control	3.21 – 3.73	0.52	0.297	0.260
creativity	experimental- active control	4.60 – 5.67	1.07	0.383	0.027
	experimental- control	3.74 – 5.67	1.93	0.400	0.0001
	active control- control	3.74 – 4.60	0.86	0.380	0.142
need for achievement	experimental- active control	4.18 – 5.30	1.12	0.343	0.008
	experimental- control	4.38 – 5.30	0.992	0.359	0.046
	active control- control	4.38 – 4.18	-0.200	0.373	0.986
self-efficacy	experimental- active control	3.68 – 5.19	1.151	0.377	0.0001
	experimental- control	4.69 – 5.19	0.50	0.349	0.764
	active control- control	4.69 – 3.68	-1.14	1.009	0.06
social orientation	experimental- active control	4.18 – 5.12	0.94	.0313	0.016
	experimental- control	4.46 – 5.12	0.66	0.327	0.995
	active control- control	4.46 – 4.18	-0.28	0.339	0.164
pro-activity	experimental- active control	4.21 – 5.06	0.85	0.360	0.074
	experimental- control	4.43 – 5.06	0.63	0.377	0.318
	active control- control	4.43 – 4.21	-0.22	0.391	0.997
persistence	experimental- active control	3.34 – 4.22	0.88	0.314	0.026
	experimental- control	3.29 – 4.22	0.93	0.328	0.025
	active control- control	3.29 – 3.34	0.05	0.340	0.998
analyzing	experimental- active control	4.83 – 5.34	0.51	0.239	0.121
	experimental- control	4.18 – 5.34	1.16	0.237	0.0001
	active control- control	4.18 – 4.83	0.65	0.246	0.060
motivating	experimental- active control	4.35 – 5.67	3.1.32	0.303	0.0001
	experimental- control	4.41 – 5.67	1.26	0.314	0.001
	active control- control	4.41 – 4.35	-0.06	0.326	0.991
entrepreneurial intention	experimental- active control	3.49 – 3.71	0.22	0.157	0.551
	experimental- control	3.35 – 3.71	0.36	0.164	0.111
	active control- control	3.35 – 3.49	0.14	0.170	0.997
entrepreneurship knowledge	experimental- active control	0.53 – 0.56	0.03	0.062	0.990
	experimental- control	0.51 – 0.56	0.05	0.065	0.998
	active control- control	0.51 – 0.53	-0.02	0.068	0.995

## 5. Conclusions

Early childhood is an important period to form and develop children's abilities and skills. If early and proper investment is not done during this period, compensating its consequences will be costly. Parents' affect is one of the most important factors in children's development. Following, proper education in primary school is very important. Moreover, according to the technology of skill formation model, childhood period is the best time to develop cognitive and non-cognitive skills. Nevertheless, non-cognitive skills are more affected and flexible and developing these skills is emphasized during childhood period.

Our results indicate that early entrepreneurship education is a proper strategy to develop children's non-cognitive skills. This strategy, which is different from children's current education program, not only is interesting for children, but also can actively engage them in learning process. Therefore, we believe entrepreneurship, as a topic, can be taught in primary schools, focusing on non-cognitive skills. Nevertheless, focus on cognitive skills (such as entrepreneurship knowledge and entrepreneurial intention) should be delayed to higher school or later. In other words, entrepreneurship is a combination of mindset, knowledge and skills and early entrepreneurship education can have an important role in creating mindset and developing entrepreneurial skills.

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