

# ENTREPRENEURIAL CHARACTERISTICS OF STUDENTS IN DIFFERENT FIELDS OF STUDY: A VIEW FROM ENTREPRENEURSHIP EDUCATION PERSPECTIVE

Marian Holienka<sup>1</sup>, Jana Holienková<sup>2</sup>, Peter Gál<sup>1</sup>

<sup>1</sup>Department of Strategy and Entrepreneurship, Faculty of Management, Comenius University in Bratislava, Odbojárov 10, 82005 Bratislava, Slovak Republic

<sup>2</sup>Department of Psychology, Faculty of Arts, University of Ss. Cyril and Methodius, Námestie J. Herdu 2, 917 01 Trnava, Slovak Republic

## Abstract

HOLIENKA MARIAN, HOLIENKOVÁ JANA, GÁL PETER. 2015. Entrepreneurial Characteristics of Students in Different Fields of Study: a View from Entrepreneurship Education Perspective. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 63(6): 1879–1889.

The aim of our article is to examine the entrepreneurial characteristics of university students in different disciplines, and to develop implications and recommendations for entrepreneurship education programming according to the observed differences. The main research question is to identify whether students from different selected disciplines exhibit different rates of enterprising potential (i.e. tendency to start up and manage projects), and if so, which are the differentiating attributes. To answer this question we conducted a study using the General Enterprising Tendency v2 Test (GET2 test) and analysed the enterprising potential of 370 university students in four different majors (business administration, applied informatics, psychology and pedagogy). The findings of our analysis suggest that there are significant differences in the general enterprising tendency levels, as well as in levels of three out of five its components (namely need for achievement, calculated risk taking and internal locus of control) between the students in analysed majors. In other words, students in different disciplines exhibit different rates of entrepreneurial predispositions. In our article we present and further discuss these findings, especially from the entrepreneurship education perspective in its broadest sense.

Keywords: enterprising potential, entrepreneurial characteristics, students, different disciplines, need for achievement, risk taking, locus of control

## INTRODUCTION

The growing importance of enterprise and enterprising in nowadays economies is undisputable. The current trends such as extreme dynamics of the environment, rapid changes and increasing cognitive complexity in all aspects of our lives lead to changing nature of interactions between individuals and groups within the society. These interactions contain various aspects of individual self-realization, including (but not limited to) the professional work career. Thus, the enterprising concept gains on importance in broad range of different contexts. Therefore, enterprising tendency embodied in entrepreneurial characteristics is

important not only for those individuals who intend to pursue the entrepreneurial path as owner-managers of traditional for-profit businesses. It is essential for everyone who aims to start and successfully run projects in various environments, either as an employee, or in social and community ventures, education, science and technology, public sector or nongovernmental organizations. The crucial role in developing enterprising tendency and shaping the entrepreneurial characteristics of students on all levels of education is played by entrepreneurship education. In nowadays context, its role is not anymore limited to foster the formation of independent for-profit

businesses, as it is traditionally perceived. Its aim should be much broader – to enhance creativity, innovativeness and ability to identify opportunities and execute ideas into reality, equipping students with so called “enterprising mindset” that can be realized in different (not only profit-oriented business) activities. Thus, the challenges for entrepreneurship education are clearly set. However, these challenges frequently face diverse reality in various fields of study, especially in case of universities. Different fields may (and generally do) attract various personalities of students and develop their enterprising tendencies in different ways. Diverse levels of enterprising tendencies imply the need for entrepreneurship education to employ varied approaches. Thus, our study aims to examine the entrepreneurial characteristics of university students in selected different disciplines and, according to the observed differences, to develop implications and recommendations for entrepreneurship education programing. The main research question is to identify whether students from different selected disciplines exhibit different rates of enterprising tendency (i.e. a tendency to start up and manage projects), and if so, which are the differentiating attributes. In order to answer this question we employ the General Enterprising Tendency v2 Test (GET2 test) and perform an analysis of enterprising tendency on a sample of 370 undergraduate and graduate students in four different disciplines (business administration, applied informatics, psychology and pedagogy) at two universities in Slovakia. We focus our attention to investigation of the general enterprising tendency as well as its different components, i.e. particular entrepreneurial characteristics. Namely, these are calculated risk-taking, creative tendency, high need for achievement, high need for autonomy, and an internal locus of control. Our findings shed light on distinctions between students in the examined disciplines and provoke debate on the different nature of entrepreneurship education challenges in these fields.

The structure of our paper is conventional. The first section provides a brief literature review on the concept of enterprise and enterprising individuals, entrepreneurship education and entrepreneurial characteristics in relation to university students. Section 2 describes materials and methods employed in our investigation. Section 3 presents the results of our analysis. Finally, section 4 discusses our findings and the last section concludes on them.

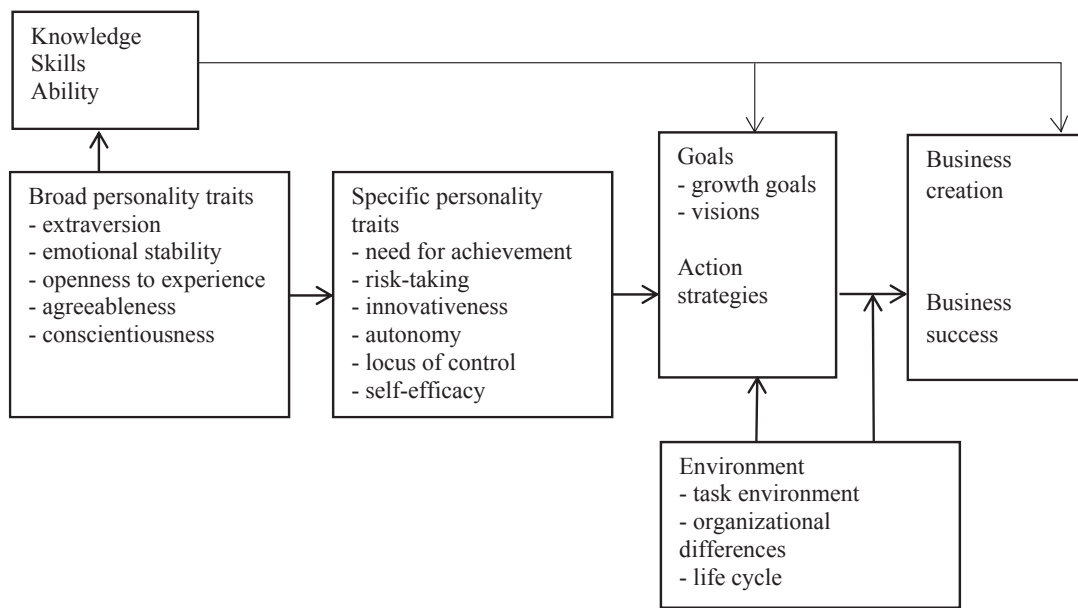
### **Enterprise, Enterprising Individuals, Entrepreneurial Characteristics and Different Contexts**

The concept of enterprise, in this context related to personal attribute (not to activity or unit of economic organization), is used in a number of situations with a number of different meanings. While the narrow view of enterprise (or being enterprising) is related to

entrepreneurship specifically concerning business ventures, a broader view has more general human meaning (Bjerke, 2013). As we have indicated above, our understanding of this concept is rather broad and related to wide array of different contexts. Thus, we incline to definition characterising enterprise (and being enterprising) as set of individual's abilities to take initiative, discover and introduce new ideas, turn these ideas into real activities and take responsibility for their execution. Particularly, in relation to business ventures, enterprise represents the ability to identify or create a business opportunity and efficiently and effectively exploit this opportunity in particular competitive business environment (Orbánová and Velichová, 2013).

Analogically to understanding of the enterprise concept and the term enterprising, an enterprising individual can be defined as a person who sets up and runs a project in wide array of different contexts (Caird, 1990), and enterprising tendency can be understood as the set of psychological characteristics associated with the tendency to set up and manage projects (Caird, 1991). Since the traditional profit-oriented business venture is a considerable type of such project, entrepreneurs (in terms of owner-managers of business ventures) can be understood as a sample or subset of a wider category of enterprising individuals (Caird, 1990), who have shown and executed the tendency to start and manage projects – their business ventures. Because entrepreneurs are a subset that has attracted the vast majority of scholars' and researchers' attention to enterprising individuals (the research on enterprising persons in different context is far not that frequent), knowledge on attributes of enterprising individuals has been based mostly on knowledge on entrepreneurial characteristics.

Entrepreneurial characteristics can be defined as specific personality traits that are typical for entrepreneurs, i.e. individuals owning and managing entrepreneurial ventures and engaged in entrepreneurial projects in various stages of development. The question whether and how personality traits should be considered in relation to entrepreneurship has been provoking a lively debate among economists and entrepreneurship scholars. Some of the first works in this field tried to establish the entrepreneurship as action related with particular qualities, such as risk taking (Knight, 1921), innovativeness, achievement orientation, dominance (Schumpeter, 1934), knowledge and entrepreneurial discovery (Hayek, 1941) or achievement motivation (McClelland, 1961). Later, among other similar works, a ground-breaking work by Gartner (1988) argued that asking “who is an entrepreneur?” is a wrong question. In other words, many serious doubts have been proposed on efforts to determine typical personality traits of an entrepreneur, as they were considered too diverse and inconsistent, descriptive and missing solid theoretical grounding, and often methodologically weak (Rauch and Frese, 2012).



1: A model of entrepreneurs' personality characteristics and success  
Source: adapted from Rauch and Frese (2012)

However, recently, the interest of entrepreneurship scholars in a personality of an entrepreneur has revived, but with some more sophisticated focuses, such as situational considerations, testing of non-linear relationships, interconnection between personality traits and personal dynamics, focusing on proximal individual differences or dealing with cognitive abilities (Rauch and Frese, 2012). With this wide array of arguments, Rauch and Frese call for revival of personality research in the field of entrepreneurship and suggest that certain specific personality traits play a considerable role in individual propensity to entrepreneurship, its various aspects and outcomes.

Regarding the particular personality traits, existing literature and empirical evidence provide several suggestions about which specific personality traits can be perceived as entrepreneurial characteristics. One of the efforts to summarize the individual differences determining entrepreneurship success, containing also a particular set of entrepreneurial characteristics, is the conceptual model of entrepreneur's personality characteristics and success proposed by Rauch and Frese (2007, 2012). Their model (Fig. 1) assumes that broad personality traits influence specific/proximal to entrepreneurship that, in turn, influence goals and action strategies and, as a result, business success. Moreover, the effects of specific traits are hypothesized to be dependent on environmental variables. In particular, the specific personality traits with significant relationships with both business creation and business success, according to meta-analysis by the authors (Rauch and Frese, 2007) are: need for achievement, risk-taking, innovativeness, autonomy, locus of control and self-efficacy.

A considerable effort to determine the specific traits attributed to enterprising individuals has been executed by Caird (1990, 1991, 1993), who extrapolated these traits from broad study of significant entrepreneurial characteristics. In her opinion, psychological characteristics of entrepreneurs and enterprising people may be identical, the only difference being the entrepreneur's specific association with a business enterprise (Caird, 1990). Her understanding of the relationship between entrepreneurial characteristics and enterprising tendency is built on several assumptions. First, entrepreneurship is considered as one of the forms of the enterprise concept. Second, entrepreneurs represent a considerable (however, not the only) subset of enterprising individuals. Third, the attributes of entrepreneurs (i.e. entrepreneurial characteristics) are used to determine the attributes of enterprising individuals in general. Fourth, enterprising individuals exhibit high levels of enterprising tendency. Considering these assumptions together with the fact, that no other form of enterprising behaviour has been studied in such extent than entrepreneurship, understanding the attributes of entrepreneurs has been used to understand and explain the attributes of enterprising behaviour (Caird, 1991). In particular, the significant entrepreneurial characteristics proposed by Caird are: calculated risk-taking, creative tendency, high need for achievement, high need for autonomy, and an internal locus of control. Below we provide brief description of these attributes.

Calculated risk-taking. Risk-bearing is a significant feature of entrepreneurship. However, entrepreneurs cannot be generalized as universal risk-takers on any circumstances. Instead, they are

rather risk-sensitive, and this sensitivity manifests in their behaviour either as risk-avoidance or risk-taking, depending on particular reward situation. Thus, calculated risk-taking has been defined by Caird (1991) as the ability to deal with incomplete information and act on a risky option, that requires skill, to analyse challenging but realistic goals.

**Creative tendency.** Creativity is an important attribute of entrepreneurship crucial for both innovative as well as replicative entrepreneurship. While the first type of entrepreneurship needs creativity to enhance revolutionary innovation, the latter utilizes creativity to enable entering the market, producing the goods and services efficiently with limited resources, and winning a respective market share. Creative tendency has been defined by Caird (1991) as the tendency to be imaginative, innovative, curious and versatile. Creative ability requires both quantity and quality of ideas, together with flexibility and innovation in thinking.

**Need for achievement.** High entrepreneurial motivation (which is rather an achievement motivation than a goal motivation) is associated with need for achievement. Moreover, this attribute has been identified as important quality not only in case of entrepreneurs, but also for other enterprising groups other than business owner-managers (Caird, 1991). Entrepreneurs with high need for achievement e.g. take personal responsibility for and seek feedback about their performance, and search for new and better ways to improve their performance.

**Need for autonomy,** which can be understood as the need to do and say as one likes despite conventional expectations, belongs to strong reasons for starting an entrepreneurial venture. The need for autonomy is related to various entrepreneurial attributes such as determination, self-reliance, inner control, calculated risk-taking, innovation or decision-making (Caird, 1991). While need for autonomy may strongly contribute to survival of business venture (because the entrepreneur tries hard to maintain his/her independent business), it can also actually obstruct venture growth when it prevents the necessary co-operation (Rauch and Frese, 2012).

**Internal locus of control.** The locus of control concept describes the extent to which individuals believe that reinforcements are dependent upon their own behaviour. The internal locus of control implies that one believes in controlling one's destiny and future. This construct is supposed to be important for entrepreneurs because believing in one's own active influence helps to increase the motivation to reach success (Rauch and Frese, 2012). Internal locus of control is associated with entrepreneurial attributes such as insight, initiative, achievement, assertion, independence, effectiveness, sociability or intellectual efficiency (Caird, 1990).

In addition to determining the entrepreneurial characteristics, Caird (1991) also developed

an instrument to measure the level of these characteristics together with the overall enterprising tendency – the General enterprising tendency test. Thus, in our article we will incline to her work and employ the proposed instrument to investigate for the answer to our research question.

### **Entrepreneurship Education: Importance, Goals and Challenges**

With theoretically and empirically grounded knowledge on set of personality traits characteristic for enterprising individuals, and entrepreneurs – owner-managers of business ventures in particular, entrepreneurship education programming can better set goals and face the challenges.

Entrepreneurship education in general seeks to prepare people, especially, youth, to be responsible, enterprising individuals who become entrepreneurs or entrepreneurial thinkers and who contribute to economic development and sustainable communities, with a fundamental premise that entrepreneurial characteristics and skills are capable of being taught (IAC, 2006). It is necessary to understand that aims of entrepreneurship education may not only be related to development of entrepreneurs, but also to development of enterprising life and work skills among people who may enter employment (or any other path of professional self-realization) rather than start a business (Caird, 1990). With such broad impact it is clear that entrepreneurship education is one of keys to face the challenges of nowadays economies. In this context, however, a more general term of “enterprise education” would better describe the complexity of the entire issue. Generally, goals of entrepreneurship education can be grouped into several categories. Caird (1990) recognizes three main categories: education for enterprise, education through enterprise, and education about enterprise. Each of these categories of entrepreneurship education has its specific aim. First, the main aim of education for enterprise is to support initiation and development of a business. Second, the main aim of education through enterprise is to develop life skills and competencies of enterprising individuals. Finally, the main aim of education about enterprise is to develop awareness and understanding of business and industry. In further detail, particular goals of different entrepreneurship education initiatives are specific according to their specific context.

In this paper we focus particularly on education within existing education systems, especially university education. The entrepreneurship education programming should develop the particular educational initiative according to clearly defined goals, but also consider the particular target group and its characteristics. Important attribute that needs to be taken into consideration is the level of entrepreneurial and enterprising characteristics of the target group. On one hand, in groups exhibiting lower levels of enterprising tendency

the emphasis should be put on development of this tendency and guidance about its usage in different contexts. On the other hand, in groups showing higher levels of enterprising tendency the attention should be paid on strengthening and capitalizing this tendency by creation of projects and business ventures. Therefore, information about the current level of enterprising tendencies and entrepreneurial characteristics of different groups of students is inevitable for efficient and effective entrepreneurship education design and delivery. Different levels of entrepreneurial characteristics of students from various fields would set different challenges for entrepreneurship education at universities and their faculties and departments.

### Entrepreneurial Characteristics of Students

University students are frequently subjects of interest when it comes to entrepreneurial characteristics. The motives are to evaluate the input characteristics of target groups for entrepreneurship education, as well as to assess the output of (not only) entrepreneurship courses and programmes. Generally, there is a hope that part of students will utilize entrepreneurial characteristics to start their own business venture, thus entering the path to economic self-sufficiency, self-employment and creation of employment opportunities for others. In our opinion, the context with this respect is much broader. Enterprising individuals who exhibit ability and willingness to take initiative, discover and introduce new ideas, turn these ideas into real activities and take responsibility for their execution can create value for themselves and the entire society not only by creating business ventures. Moreover, they can utilize their potential to start and successfully run projects in various environments irrespective the particular context, either as an employee, or in social and community ventures, education, science and technology, public sector or nongovernmental organizations. With these projects, they contribute to society by creating a value for different stakeholders. At the same time, they also increase their qualification, competitiveness and value on the labour market.

The assumption about differences in levels of entrepreneurial characteristics and enterprising tendency between students in different fields is based on two main preconditions. First, different disciplines may, in general, obviously attract various personalities of students and develop their enterprising tendencies in different ways. This is because of the nature of the discipline itself, as well as because of the nature of educational process in this discipline. Second, differences in enterprising levels have been confirmed among different occupational groups (Caird, 1991). Since students will join the respective occupational group after their graduation, and we already expect their certain conformity with these groups, the differences in enterprising tendency may be already observable during the studies. Building on these two arguments,

we assume the existence of differences in overall enterprising tendency as well as in particular entrepreneurial characteristics between university students in different fields of study.

Empirical findings about this particular phenomenon with respect to diverse disciplines are rather scarce. The main attention of empirical research related to students and entrepreneurship is paid to entrepreneurial intentions and their preconditions. We found several studies dealing with different students' attributes and characteristics in relation to entrepreneurship worldwide (Koh, 1996; Yusof *et al.*, 2007; Pfeifer *et al.*, 2014) as well as in Slovakia (Flešková and Babjaková, 2011; Holienka *et al.*, 2013; Mesárošová and Mesároš, 2013; Šúbertová and Kinčáková, 2012).

Koh (1996) has studied the relationship between entrepreneurial inclination of MBA students and their selected psychological characteristics related to entrepreneurship. According to his findings, entrepreneurially inclined students exhibit significantly higher propensity to take risk, greater innovativeness and greater tolerance of ambiguity. Yusof *et al.* (2007) investigated for students' entrepreneurial inclinations and related psychological characteristics. Their results suggest that risk taking and innovativeness, need for achievement and tolerance for ambiguity had positive and significant influence on students' entrepreneurial inclination. Pfeifer *et al.* (2014) conducted a study on various individual attributes related to entrepreneurship among university students, and found out that students with higher entrepreneurial intentions exhibit stronger entrepreneurial identity, higher self-efficacy and higher entrepreneurial outcome expectations.

Concerning the studies conducted among students in Slovakia, Šúbertová and Kinčáková (2012) have studied students' entrepreneurial knowledge, skills and mindset. According to their findings, almost two thirds of undergraduate business students are interested in entrepreneurial career in the future. Furthermore, among those with no entrepreneurial intention they identified an influence of negative family role models. Holienka *et al.* (2013) have particularly focused on entrepreneurial intentions of university students in relation to family entrepreneurial role models. Their results suggested that students exposed to family entrepreneurial role models with positive business experience showed significantly higher intention to become entrepreneurs. Considering broad personality traits, Flešková and Babjaková (2011) analysed entrepreneurial intentions of students in relation to Big five personality traits, and found out no significant difference in Big five personality traits between students planning to start their own business and those preferring employment career path. On the other hand they found significant difference in four out of five personality traits (except of agreeableness) when dividing students according to self-confidence about having required

entrepreneurial skills. Particularly in relation to entrepreneurial characteristics, Mesárošová and Mesároš (2013) have compared enterprising tendencies and their predictors among students in two different disciplines and business owner-managers. According to their findings, enterprising tendency of business owner-managers was higher than among students, while differences between economy and philosophy students' enterprising tendencies were found not to be significant.

## MATERIALS AND METHODS

The aim of our study was to identify the level of general enterprising tendency among students in different fields of study. In order to achieve this aim, we have employed the following materials and methods in our analysis.

### Sample

The sample of our study comprised of 370 students from two Slovak universities (located in Bratislava and Trnava) studying in four different fields of study. Considering the investigated topic, the only sampling criterion that we applied was an active full-time university study in one of the analysed majors, without any gender or age limitations. The sample comprised of 157 students of business administration, 49 students of applied informatics, 101 students of psychology and 63 students of pedagogy. The respondents attended third year of bachelor (undergraduate) level and first and second years of masters (graduate) level. The respondents were acquired using a convenience sampling technique. The data were gathered from October 2013 to October 2014.

### Measure and Variables

The overall level of enterprising tendency as well as its different attributes (entrepreneurial characteristics) were measured using the General Enterprising Tendency v2 Test (GET2 test), a foreign survey method developed by Sally Caird (1991).

GET2 test is a self-assessment scale comprising of 54 statements that aims to measure key attributes of enterprising individuals by assessing five key characteristics, namely calculated risk taking (represented by 12 items), creative tendency (represented by 12 items), need for achievement (represented by 12 items), need for autonomy (represented by 6 items), and internal locus of control (represented by 12 items). The overall enterprising tendency score of an individual is calculated as a total of all items, with maximum score of 54 points. The score of 44 to 54 points (high score) indicates that individual is considered as very enterprising, the medium score (27 to 43 points) indicates possession of some enterprising qualities, and low score (0 to 26 points) indicates low levels of general enterprising tendency. As for particular characteristics, the 12-point attributes scoring is: high (10 to 12 points), medium (7 to 9 points) and low

(0 to 6 points). With 6-points attribute, the scoring is: high (4 to 6 points), medium (3 points) and low (0 to 2 points).

The GET2 test questionnaire has been translated to Slovak language following the requirements for survey instruments translation, and it has been distributed in Slovak language version. We followed the original instructions to administer and evaluate the survey instrument. The internal consistency analysis in our sample of university students provided satisfactory values of Cronbach's alpha coefficient for the entire questionnaire ( $\alpha = 0.840$ ) as well as for its particular factors (calculated risk taking:  $\alpha = 0.767$ , need for achievement:  $\alpha = 0.766$ , need for autonomy:  $\alpha = 0.755$ , creative tendency:  $\alpha = 0.802$  and internal locus of control:  $\alpha = 0.621$ ). The factor analysis confirmed the existence of five factors that together explain 55.48% of overall variance.

### Method

The main scientific goal of our study was to investigate whether university students from different disciplines exhibit diverse levels of overall enterprising tendency as well as of particular entrepreneurial characteristics measured by the General enterprising tendency scale. The obtained data were analysed using a parametric statistics with Fisher's F-test One-Way ANOVA test criteria (analysis of variance). This statistical method was selected due to comparison of several populations (students from four different fields of study) according to quantitative variable (overall enterprising tendency, entrepreneurial characteristics). The analysis was executed in SPSS v.21 statistical software package.

## RESULTS

We assumed the differences in overall enterprising tendency as well as in particular entrepreneurial characteristics between university students in different fields of study. The results of our investigation suggest that there are statistically significant differences in the overall enterprising tendency as well as in case of three (out of five tested) entrepreneurial characteristics.

In the first step of our investigation we have focused on analysis of differences in overall enterprising tendency between the different fields of study. Basic descriptive statistics and results of one-way analysis of variance are provided in Tab. I.

As can be seen in Tab. I, results of Fisher's F-test One-Way ANOVA suggest that differences in overall enterprising tendency between the assessed fields of study are statistically significant ( $F = 5.856$ ;  $p = 0.001$ ). These findings suggest that students of distinct fields of study exhibit differences in the overall level of enterprising tendency, and these differences are in direction of higher levels for students of business administration > students of psychology > students of applied informatics > students of pedagogy.

I: Comparing the levels of overall enterprising tendency according to field of study

Overall Enterprising Tendency	Field of study	Mean	SD	ANOVA	
				F	p
	Business administration	34.605	0.594	5.856	0.001
	Applied informatics	31.184	1.496		
	Psychology	31.871	0.706		
	Pedagogy	30.444	0.935		

Source: own elaboration

According to these findings we suggest that students in different fields of study exhibit diverse levels of overall enterprising tendency.

The average values of overall enterprising tendency (Tab. I) further suggest that, among the fields of study analysed in our investigation, students of business administration exhibit the highest average value of overall enterprising tendency (M = 34.605; SD = 0.594), while students of pedagogy seem to be the least enterprising (M = 30.444; SD = 0.935). However, according to interpretation of GET2 test evaluation, average values of all analysed groups of students fall into the same category of enterprising tendency – a medium range, indicating possession of some enterprising qualities. The medium score indicates that individuals are likely to have strengths in some enterprising characteristics and may be enterprising in some contexts. At the same time, they are less likely to set up an innovative high growth business venture, and may be able to express

their enterprising tendency within employment (as intrapreneurs) on in their leisure time (e.g. through voluntary community projects). On the other hand, the results also indicate that students of business administration are on average more inclined to possession of high enterprising qualities than the other groups.

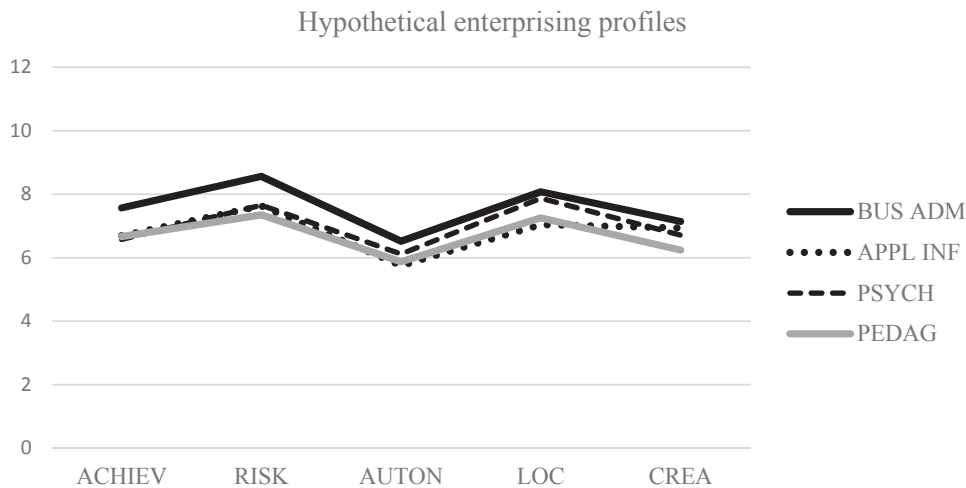
In further investigation we have analysed the differences in particular entrepreneurial characteristics between the assessed fields of study. Basic descriptive statistics and results of one-way analysis of variance are provided in Tab. II. Also, we have constructed hypothetical visual enterprising profiles of students in different disciplines (Fig. 2).

The differences in entrepreneurial characteristics between the analysed fields of study measured using the Fisher's F-test (Tab. II) were found to be statistically significant in case of three attributes, namely: need for achievement (F = 5.074; p = 0.002), calculated risk taking (F = 6.106; p = 0.000), and

II: Comparing the levels of entrepreneurial characteristics according to field of study

Subscale	Field of study	Mean	SD	ANOVA	
				F	p
Need for achievement	Business administration	7.5669	2.28786	5.074	0.002
	Applied informatics	6.6939	2.80033		
	Psychology	6.5743	2.01170		
	Pedagogy	6.6667	2.30007		
Calculated risk taking	Business administration	8.5605	2.17308	6.106	0.000
	Applied informatics	7.6327	2.62753		
	Psychology	7.6535	2.20652		
	Pedagogy	7.3492	2.32905		
Need for autonomy	Business administration	3.2611	1.35470	1.501	0.214
	Applied informatics	2.8776	1.42350		
	Psychology	3.0594	1.37711		
	Pedagogy	2.9365	1.30598		
Internal locus of control	Business administration	8.0764	2.20297	4.109	0.007
	Applied informatics	7.0408	2.69227		
	Psychology	7.8713	1.84750		
	Pedagogy	7.2540	2.14753		
Creative tendency	Business administration	7.1401	2.23164	2.179	0.090
	Applied informatics	6.9388	2.86071		
	Psychology	6.7129	2.38469		
	Pedagogy	6.2381	2.69237		

Source: own elaboration



2: *Hypothetical enterprising profiles of students in different disciplines*  
Source: own elaboration

internal locus of control ( $F = 4.109$ ;  $p = 0.007$ ). Thus, our findings suggest that students in different fields of study exhibit significantly different levels of need for achievement, ability to take calculated risk and having an internal locus of control. On the other hand, distinctions in levels of need for autonomy and creative tendency were not found to be significant. The average values of particular entrepreneurial characteristics evaluations (Tab. II) further suggest that, among the fields of study analysed in our investigation, students of business administration (like in case of the overall enterprising tendency) exhibit in case of all five measured attributes higher average values than their counterparts in other fields of study.

The hypothetical enterprising profile of each group of students (Fig. 2) has been constructed as a composition of mean values of the particular entrepreneurial characteristics. The visualisation especially emphasizes three main findings. First, business administration students prevail over the other groups in all five attributes, with the strongest domination in the first two attributes – need for achievement and calculated risk taking. Second, the overall composition of enterprising profiles, irrespective the field of study, has the similar shape, indicating the higher evaluation of calculated risk taking and internal locus of control over the remaining three attributes. The only outlier in this pattern seems to be the relatively higher creative tendency compared to remaining attributes among applied informatics students. Finally, there is no indication of especially high or low valuation of any attribute in any of the analysed groups. Thus, there are no observations on potential consistent extremes in entrepreneurial characteristics levels in any of the examined fields of studies.

Looking at the evaluation of particular entrepreneurial characteristics according to scoring categories provides some suggestions on distinctions between the students in the analysed

fields of study. In case of need for achievement, medium level of this attribute (indicating inclination to consider rather “tried and tested” enterprising ideas) was exhibited only by students of business administration. All remaining groups exhibited low levels of this trait (indicating probability that running an enterprise would be too much hard work and commitment). Same situation was identified in case of creative tendency. Medium score among business administration students indicates preference to somehow more straightforward rather than completely novelty enterprising ideas, while low score among students of other disciplines indicates satisfaction with proven, traditional approaches. In case of all remaining attributes, average values of all groups fell into medium level. Medium level of calculated risk taking indicates orientation on rather “tried and tested”, less risky enterprising ideas or ideas where risk is taken by the partner. Medium level of need for autonomy indicates rather indifference to work as an intrapreneur, member of a team, or to run independent projects. Finally, medium level of internal locus of control indicates need for further development of self-confidence and enterprising skills to exert a greater control over the development of ones ideas, due to possible over-reliance on others in running the projects.

The previously described results indicated differences between students of analysed fields of study in the overall enterprising tendency as well as in case of three out of five entrepreneurial characteristics. Thus, in the last step of our investigation, in order to support robustness of our findings, we aimed to find out the statistical significance of differences between the average values, using the multiple comparison of means, which compares the analysed populations (i.e. groups of students in different fields of study). Business administration students were set as a comparison group due to achieving the highest



III: Comparison of average scores between business administration and other fields of study

Dependent variable	Field of study	Field of study	Mean Differences	Sig.
Overall Enterprising Tendency	Business administration	Applied informatics	3.42142	0.008
		Psychology	2.73381	0.006
		Pedagogy	4.16065	0.000
Need for achievement	Business administration	Applied informatics	0.87300	0.021
		Psychology	0.99262	0.001
		Pedagogy	0.90021	0.009
Calculated risk taking	Business administration	Applied informatics	0.92786	0.013
		Psychology	0.90704	0.002
		Pedagogy	1.21130	0.000
Need for autonomy	Business administration	Applied informatics	0.38360	0.086
		Psychology	0.20174	0.246
		Pedagogy	0.32464	0.111
Internal locus of control	Business administration	Applied informatics	1.03562	0.004
		Psychology	0.20515	0.460
		Pedagogy	0.82246	0.012
Creative tendency	Business administration	Applied informatics	0.20135	0.615
		Psychology	0.42726	0.172
		Pedagogy	0.90203	0.014

Source: own elaboration

average value in all scores. Results of this analysis are presented in Tab. III.

As can be seen in Tab. III, business administration students exhibit significant differences from all other fields of study in the overall enterprising tendency as well as in case of two particular entrepreneurial characteristics, namely need for achievement and calculated risk-taking. In case of the three remaining analysed characteristics, only partially significant differences between business administration and other students were confirmed. Firstly, in case of internal locus of control, business administration students exhibited significantly different average values compared to applied informatics and pedagogy students, but not compared to psychology students. Secondly, in case of creative tendency, business administration students significantly differ only from pedagogy students, not from the remaining two groups. Finally, in case of need for autonomy, we found no significant differences in average values between business administration students and students from other analysed fields of study.

## DISCUSSION

The results of our analysis suggest that the levels of overall enterprising tendency and the levels of its components – particular entrepreneurial characteristics vary among university students across the analysed fields of study. These findings contribute to the field of study in general and specifically in Slovakia. Unlike previous similar study (Mesárošová and Mesároš, 2011), our findings indicated difference between the analysed

disciplines. However, in our case the analysed disciplines were more heterogeneous, while in case of study by Mesárošová and Mesároš they fell into the same group of sciences. In general, we have provided a considerable evidence on differences in enterprising tendencies and entrepreneurial characteristics among students in different fields of study. Based on these findings, we have developed several implications and challenges for entrepreneurship education programming.

The overall enterprising tendency in all analysed fields of study can be defined as medium and rather inclining to low, according to GET2 test-based classification. This is a serious challenge for education, as in our opinion, the gap between current and desired levels of enterprising tendency is rather high. Obviously, not all students can or should be entrepreneurs (in terms of owner-managers of profit-oriented businesses). However, we do not appeal for more entrepreneurship. Instead, we call for development of enterprising spirit and skills among current and future generations of students, and its realization in various contexts (e.g. entrepreneurship, intrapreneurship, social and community ventures, education, science and technology, public sector or nongovernmental organizations), for the benefit of themselves as well as the entire society. We understand that development of enterprising qualities should start in earlier phases of education process (in our opinion, even in kindergartens and elementary schools). However, emphasis on university students is crucial since they stand on important crossroads of their professional career, and their decision to

pursue the enterprising path (in any of its forms) can affect their entire career orientation.

In our opinion, development of enterprising tendency and entrepreneurial characteristics is important in all fields of study we have considered in our analysis. Namely, students of psychology will need the enterprising qualities to systematically build and develop their professional career, constantly educate themselves and innovate, and build own professional identity. Pedagogy students as future teachers should be enterprising in developing various projects, activities and innovations in education process; in creating challenging and stimulating classroom atmosphere; and last but not least, in stimulating and encouraging enterprising qualities among their students and pupils. Applied informatics students would utilize enterprising qualities in inventing innovative solutions, starting new projects or in some cases also own business ventures. Generally, they possess a marketable hard skill, so with sufficient enterprising spirit they have good precondition to create and market a value that can secure them economic self-sufficiency. Finally, business administration students will need to be enterprising to run their own business or work as professional executive managers or project managers. Moreover, they would also need to support enterprising cultures in their organizations. The entire management profession is about leadership and development of new directions, ideas and opportunities, i.e. about application of enterprising qualities in different contexts.

To respect and account for the identified differences, the entrepreneurship education design and delivery should follow the customization principle. Since students in different fields of study exhibit different levels of enterprising potential, we encourage to follow a “language school-like” principle, where levels of input characteristics in different groups are tested, groups are sorted into particular “levels”, and approach that best corresponds with their characteristics is applied. Moreover, the tailor-made principle should not stop on this level. Basic customization on the level of particular disciplines or fields of study (according to level of overall enterprising tendency, entrepreneurial characteristics and specific characteristics of the discipline in relation to enterprise) should be further developed on lower levels, i.e. particular study groups, teams and even particular students. Everyone should have a chance

to develop and execute his/her enterprising potential at highest possible level. However, such education requires well-trained, supported and highly-motivated teachers as well as favourable ecosystem providing all sorts of necessary support.

More specifically, speaking in terms of entrepreneurship education aims according to levels of enterprising tendency, we suggest to focus on education for enterprise (aimed to strengthen and capitalize the enterprising tendency by supporting initiation and development of projects, especially businesses) for students with high enterprising tendency; on a combination of education for enterprise and through enterprise (aimed to develop enterprising life skills and competencies and guide about their usage in different contexts) for students with medium enterprising tendency; and on education through enterprise for students exhibiting low tendency for enterprising.

The highest level of enterprising tendency among business administration students can be explained by several reasons. In our opinion, it should be obvious “by definition”, because these students usually decide themselves to educate in business administration with motivation to become leaders, managers or entrepreneurs in the future. Also, as indicated by significantly higher need for achievement (than in all other groups), business administration students may possess higher drive and desire for self-realization in leading positions in different kinds of projects/contexts (professional executives, project managers, owner-managers, etc.). This level suggests, that entrepreneurship education in this field of study should strengthen its focus “for enterprise”, i.e. with aim to support initiation and development of projects, especially independent businesses.

Rather worrying are the results of pedagogy students, indicating the lowest overall enterprising tendency among the analysed groups of students. Nowadays situation requires building and developing enterprising tendency already from childhood, and current pedagogy students/future teachers are those that will play a key role with this respect. If we want them to guide children towards enterprising, they need to be more enterprising themselves. For this reason, the role of entrepreneurship education among pedagogy students should be strengthened, with main aim on education through enterprise, i.e. to develop life skills and competencies of enterprising individuals.

## CONCLUSION

Our analysis has provided evidence on different levels of overall enterprising tendency and particular entrepreneurial characteristics (namely need for achievement, calculated risk taking and internal locus of control) between students with different majors. While students of business administration exhibited the highest enterprising tendency, pedagogy students were found to be the least enterprising among the analysed fields of study. Irrespective the particular order, our findings pointed out considerable differences between the different disciplines, as well as generally rather insufficient levels of enterprising qualities. These findings emerged into certain implications and challenges for entrepreneurship education, in order to foster the enterprising spirit that is so important among university students in nowadays society.

## Acknowledgement

This work was supported by the Slovak Research and Development Agency under the contract No. APVV-14-0647. Marian Holienka furthermore gratefully acknowledges support by the Comenius University Grant number UK/495/2015 for the project "Development of entrepreneurial attributes of students in different fields of study".

## REFERENCES

- BJERKE, B. 2013. *About Entrepreneurship*. Cheltenham: Edward Elgar Publishing.
- CAIRD, S. 1990. What Does it Mean to be Enterprising? *British Journal of Management*, 1(3): 137–145.
- CAIRD, S. 1991. Testing Enterprising Tendency in Occupational Groups. *British Journal of Management*, 2(4): 177–186.
- CAIRD, S. 1993. What do psychological tests suggest about entrepreneurs? *Journal of Managerial Psychology*, 8(6): 11–20.
- FLEŠKOVÁ, M. and BABJAKOVÁ, B. 2011. Entrepreneurship in relation to Big Five personality dimensions [in Slovak: Podnikanie vo vzťahu k osobnostným dimenziám Big Five]. In: *Sociálne procesy a osobnosť 2010: zborník príspevkov*. Stará Lesná, 20–22 September. Košice: Spoločenskovedný ústav SAV, 100–107.
- GARTNER, W. B. 1988. Who is an Entrepreneur? is the wrong question. *American Journal of Small Business*, 12(4): 11–32.
- HAYEK, F. 1941. *The Pure Theory of Capital*. Chicago: University Press.
- HOLIENKA, M. et al. 2013. Role of family entrepreneurial role models in determining students' preferences towards entrepreneurship. In: *Proceedings of ICERI2013 Conference*. IATED, Seville, Spain, 18–20 November. IATED, 3722–3730.
- IAC. 2006. *Youth entrepreneurship: theory, practice and field development*. A Background Paper Prepared for the W. K. Kellogg Foundation.
- KNIGHT, F. H. 1921. *Risk, Uncertainty and Profit*. Hart, Schaffner, and Marx Prize Essays, No. 31. Boston and New York: Houghton Mifflin.
- KOH, H. C. 1996. Testing hypotheses of entrepreneurial characteristics: a study of Hong Kong MBA students. *Journal of Managerial Psychology*, 11(3): 12–25.
- McCLELLAND, D. C. 1961. *The Achieving Society*. Princeton, NJ: Van Nostrand.
- MESÁROŠOVÁ, M. and MESÁROŠ, P. 2013. Enterprising tendency of students and entrepreneurs [in Slovak: Podnikateľská tendencia študentov a podnikateľov]. In: *Psychológia práce a organizácie 2012: zborník z medzinárodnej konferencie*. UPJŠ, 23–24 April. Košice: UPJŠ, 89–101.
- ORBÁNOVÁ, D. and VELICHOVÁ, L. 2013. Importance of Entrepreneurship and Financial Literacy in the Socio-Economic Progress and Personal Growth of Young People in the Slovak Republic [in Slovak: Význam podnikavosti a finančnej gramotnosti v socioekonomickom a osobnom rozvoji mladých ľudí v Slovenskej republike]. *Sociológia*, 45(5): 470–488.
- PFEIFER, S. et al. 2014. Shaping the Entrepreneurial Mindset: Entrepreneurial Intentions of Business Students in Croatia. *Journal of Small Business Management*, online early view.
- RAUCH, A. and FRESE, M. 2012. Born to Be an Entrepreneur? Revisiting the Personality Approach to Entrepreneurship. In: BAUM, J. R. et al. (eds.), *The Psychology of Entrepreneurship*. New York, NY: Psychology Press.
- RAUCH, A. and FRESE, M. 2007. Let's put the person back into entrepreneurship research: A meta-analysis on the relationship between business owners' personality traits, business creation, and success. *European Journal of Work and Organizational Psychology*, 16(4): 353–385.
- SCHUMPETER, J. 1934. *The Theory of Economic Development*. Cambridge: Harvard University Press.
- ŠÚBERTOVÁ, E. and KINČÁKOVÁ, M. 2012. Evaluation of the Results Analysis in the Entrepreneurial Thinking of Business Students in Slovakia. *Economic Review*, 41(1): 19–30.
- YUSOF et al. 2007. Relationship between psychological characteristics and entrepreneurial inclination: a case study of students at University Tun Abdul Razak. *Journal of Asia Entrepreneurship and Sustainability*, 3(2): 23–41.

## Contact information

Marian Holienka: marian.holienka@fm.uniba.sk  
 Jana Holienková: jana.holienkova@ucm.sk  
 Peter Gál: peter.gal@fm.uniba.sk