

WHAT THEORIES EXPLAIN ENTREPRENEURSHIP AS COMPARED TO INNOVATIVE LEADERSHIP?

[Aké teórie vysvetľujú podnikanie a aké inovatívny leadership?]

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Abstract: Business creation theories were rarely explored with stages that precede the final intention to start a business. Therefore, this paper aimed to examine what factors impact the final decision to start a business and what factors just lead to a more favourable perception of a business opportunity. Several theories recognized by literature like the theory of planned behaviour, traits, cognitive biases, and risk attitudes were tested. Moreover, the explanatory power of these theories to entrepreneurship compared to innovative (leadership) practices was tested. When examining multiple regression models, it was shown that above mentioned theories predict entrepreneurship as well as innovative practices. Model that involved business creation theories predicting opportunity evaluation was significant. Among predictors of opportunity evaluation, it was shown that unrealistic optimism, risk attitudes as well as traits or theory of planned behaviour did contribute to the prediction of opportunity evaluation. When testing multiple regression model of the final decision to invest in the business opportunity, it was shown that it solely depends on risk perception. No theories other than risk perception predicted the decision to start a business. From the multiple regression model explaining innovative practices, it was shown that traits and positive illusions significantly added to the prediction of innovative practices. Overall findings contribute to the debate of entrepreneurship predictors and suggest that the final decision to start a business is rather determined by risk perception. The results suggest that risk perception is the factor, which may distinguish entrepreneurs from others that incline to entrepreneurship but may not found their own business and rather be innovative on the job. This study emphasizes that cognitive phenomena are applicable in explaining entrepreneurial intention and those qualities may be addressed by entrepreneurial education.

Keywords: decision-making, decision to start a business, innovative behaviour, opportunity evaluation.

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Introduction

Entrepreneurial intention is a stable indicator of entrepreneurial behaviour in entrepreneurship research (Kautonen, Gelderen and Fink 2015). Moreover, it is anchored in empirically robust models of entrepreneurial intention like the theory of reasoned action and the theory of planned behaviour (Krueger 2003), trait theories, theories of cognitive biases, and risk predictors (Randolph-Seng 2015). Scholars raised awareness that the decision to start a venture encompasses opportunity discovery, opportunity evaluation and decision to found a business (Shane and Venkataraman 2000), thus process perspective instead of examination of sole entrepreneurial intention may be adopted. Krueger (2003) adopted a framework that incorporates an opportunity's perceived desirability and feasibility into the entrepreneurial intention framework. Wood, Williams, and Gregoire (2012) developed a four-phase model of the entrepreneurial process, involving not only entrepreneurial intention, opportunity evaluation, and opportunity identification, but also entrepreneurial thinking. Drawing on the entrepreneurial process view, the entrepreneurial intention should be thus measured along with other phases. The first goal of this paper is, thus, to examine what theories are affecting the final decision to start a venture as opposed to other preceding stages.

Critique of the entrepreneurial intention measurement is also directed towards the nature of entrepreneurial intention and some assume a more attitudinal nature of entrepreneurial intention encompassed in the theory of planned behaviour or theory of reasoned action (Krueger 2003). The entrepreneurial intention was also rarely examined along each antecedent of the theory of planned behaviour (Lortie and Castogiovanni 2015). There is also a debate about the several kinds of entrepreneurial intention (Krueger 2003). Additionally, the decision to start a business lacks proper measurement. Self-employment intentions were frequently measured by a single question or several questions evaluated on the Likert scale (e.g. Kolvereid 1996, Kolvereid and Isaksen 2006). However, decisions to start a business were also measured via business scenarios with different levels of risk indicated by the percentual estimate of potential returns (Forlani and Mullins 2000) or by the business plans containing several criteria indicating the risk as well as the potential benefit (Simon et al. 2000, Keh et al. 2002, Gupta et al. 2014) or business scenarios manipulating with uncertainty (Gustafsson 2004, Shepherd and Zacharakis 2010). Just a few scholars adopted the process view of starting a business involving not only opportunity evaluation of a business opportunity, but also a final decision for the opportunity (Grichnik, Smeja and Welppe 2010).

The second goal of this paper is to identify what theory explains the final decision to start a business. There are several theories identified that explain entrepreneurship and after economic theories was the examination of personality characteristics, demographic criteria and traits widespread in the literature (Randolph-Seng et al., 2015). Then cognitive approaches, like heuristics and cognitive biases or intention-based approaches, rose to prominence. Therefore, this study aims to test the predictors of two stages of the decision to start a venture. Since the entrepreneurial process involves the evaluation of the desirability and feasibility of the opportunity and then the realization of the opportunity, both phases will be examined. Besides the theory of planned behaviour predictors, also cognitive biases – positive illusions, risk attitudes, and traits will be linked to the evaluation of opportunity and decision to invest in the business opportunity. The third goal of this paper is to examine what theories explain entrepreneurship as opposed to innovative practices that may refer rather to intrapreneurship. This analysis will aim to understand the extent to which above-mentioned theories explain entrepreneurship rather than innovative practices referring to intrapreneurial practices of individuals.

1 Business creation theories - theory of planned behaviour, traits, risk attitudes, and cognitive biases

The theory of planned behaviour was formed gradually. The first model of intention was created by Ajzen and Fishbein and it is called the Theory of Reasoned Action. Firstly, the theory of reasoned action encompassed a positive attitude toward behaviour and then the second attitude referring to the impact of social norms was added. Besides these two predictors, Ajzen's Theory of Planned Behaviour incorporated a third antecedent called perceived behavioural control, which reflects perceived competence in the area of potential behaviour (Krueger 2003). A similar model of entrepreneurial intention was created by Shapero (1975, 1982; in Krueger 2003), which suggests that initiating entrepreneurial behaviour relies on the personal and social perception of desirability and perception of feasibility (Krueger 2003). A study by Kautonen, Gelderen and Fink (2013) showed that attitudes, subjective norms, and perceived behavioural control explain more than half of the variation of entrepreneurial intention and it is a valid predictor of subsequent start-up behaviour. The analysis by Kautonen et al. (2013) showed that among all antecedents of intention, subjective norms have the strongest effect on entrepreneurial intention. Besides self-employment intention, the theory of planned behaviour

was used to predict business development, opportunity recognition, innovative behaviour, decision to invest, network ties, or decision to leave a business (Lortie and Castogiovanni 2015).

Via the lens of entrepreneurial decision-making, also other factors can affect entrepreneurial decision-making, not just that identified by the theory of planned behaviour. Entrepreneurship activities are the most robust dimension and they involve opportunity assessment decisions, entrepreneurial entry decisions, decisions about the realization of opportunities and entrepreneurial exit decisions, and heuristics and biases influencing the decision-making process (Shepherd et al. 2014). Cognitive biases, thus, belong to the core predictors of entrepreneurial opportunity evaluation and realization. Zhang and Cueto (2015) state that since entrepreneurial decision-making requires taking risks, cognitive biases – positive illusions such as overconfidence and unrealistic optimism may play a role. Unrealistic optimism refers to the individual's overestimation of the likelihood of favourable events compared to others and compared to the objective likelihood (Taylor and Brown 1988). Better than average effect (overconfidence) refers to the tendency to perceive the self as better compared to others (Taylor and Brown 1988). Along with overconfidence and unrealistic optimism, the illusion of control belongs to the positive illusion (Taylor and Brown 1988). The illusion of control refers to the individual's greater belief in controllability, whereas the situation may be determined by chance (Taylor and Brown 1988). Although self-enhancing beliefs may increase motivation, persistence and thus impact performance (Taylor and Brown 1988), positive illusions may reduce risk perception due to an individual's omitting of uncertainty (Zhang and Cueto 2015). Some positive illusions, like overconfidence, may affect opportunity evaluation and subsequent decision-making via emotions, since they may produce less negative emotions (Zhang and Cueto 2015).

Risk attitudes, such as risk seeking or risk aversion, loss aversion and weighting of probabilities may be elicited from the games formed by Tversky and Kahneman (1992). Concerning risk-seeking in the games of Kahneman and Tversky (1992), two tendencies were discovered. The first is that individuals choose a small probability of winning a large prize rather than a prospect with the same expected value. The second is that individuals tend to be risk-seeking when they have to decide between a sure loss and the probability of a larger loss. With regard to the perception of losses as compared to gains, the loss is perceived more intensively than gains (Tversky and Kahneman 1992). Not only loss aversion or the propensity to risk are influencing the final decision, but Forlani and Mullins (2000) suggest distinguishing between risk propensity and risk perception. Furthermore, Palich and Bagby (1995) stress the need for risk perception examination, since they found that there is no difference between entrepreneurs and non-entrepreneurs in risk propensity, there is difference in their categorization of business events, thus domain-specific risk perception.

Randolph-Seng et al. (2015) state that various traits, like the need for success or internal locus of control, were assumed to characterize entrepreneurs. Latest studies showed that gender roles and feminine or masculine traits can to a large degree explain the intention to start a venture (e.g. Palmer, Griswold, Eidson and Wiewel 2015). Females and males have both masculine and feminine traits (Carver et al. 2013). Palmer, Griswold, Eidson and Wiewel (2015) examined predictors of entrepreneurial intention among university students. Results showed that masculinity is a significant predictor of entrepreneurial intention predominantly for male students. Despite different methodologies, Perez-Quintana's, Hormiga's, Martori's and Madariaga's (2017) results also showed that masculine traits are correlated with entrepreneurial intention. The sample consisted of business administration students. Mueller and Dato-on (2008) used self-efficacy to understand the entrepreneurial intention. Their study shows that

whereas in the early stages of business creation feminine as well as masculine traits improve performance, in the latest stages of venture creation masculine traits grow in importance. Mueller and Dato-on (2017) deciphered several tasks during the entrepreneurial process and whereas the early stage of venture creation required feminine and masculine traits, thus innovation as well as creativity, later stages required more masculine traits, predominantly in tasks like planning or leading. Moreover, they found that not gender solely, but gender roles referring to feminine or masculine traits did impact the entrepreneurial intention of business students.

2 Entrepreneurial intention versus innovative practices

Marques, Valente and Lages (2017) assumed that organizations can benefit from the proactiveness, innovative behaviour, risk taking, and new ideas of their employees, which are entrepreneurial qualities. From an organizational perspective, Kuratko, Hornsby and Covin (2014) conducted a study on corporate entrepreneurship activity and posit that five dimensions of organization, like managerial support, autonomy, reinforcement, time availability, and procedures lead to corporate entrepreneurship. From the perspective of an individual, Douglas and Fitzsimmons (2013) found that entrepreneurial self-efficacy led to both, intrapreneurial as well as entrepreneurial intention and risk tolerance led to intrapreneurial intention, not the entrepreneurial intention. Thus, theories explaining entrepreneurial intention may explain innovative behaviour either. One instrument that grasps innovative behaviour is Leadership practices inventory of Kouzes and Posner (2013). Díaz, Sánchez-Vélez and Santana-Serrano (2019) compared the leadership practices of Kouzes and Posner (2017) to transformational leadership. Díaz and colleagues (2019) claim that entrepreneurs are exhibiting their dispositions based on how inclined are they toward innovation, proactivity and taking risks. One dimension of Leadership practices inventory reflects searching for opportunities using initiative and searching for improvement. It also encompasses experimenting and taking risks (Kouzes and Posner 2017). Therefore, the above-mentioned dimension may indicate the innovative practices of an individual and its testing may unfold to what extent various business creation antecedents predict entrepreneurship versus innovative practices, which may rather refer to intrapreneurship.

H1: Theory of planned behaviour, traits, cognitive biases – positive illusions, risk attitudes of individuals will predict business opportunity evaluation

H3: Theory of planned behaviour, traits, cognitive biases – positive illusions, risk attitudes of individuals will predict the decision to invest in a business opportunity.

H3: Theory of planned behaviour, traits, cognitive biases – positive illusions, risk attitudes of individuals will predict innovative (leadership) practices.

Method

Procedure

Data were collected among students via Google Form from the end of September 2020 until the end of October 2020. Aim of the study was introduced at the beginning of the questionnaire. Descriptives (e.g. gender, age, university degree, field of study) followed the introduction, then traits, innovative (leadership) practices, cognitive biases, risk attitudes, theory of planned behaviour antecedents followed. After a business opportunity case study, respondents evaluated feasibility of business opportunity and decided whether to invest in the business opportunity. Convenience sampling was applied and data were gathered from students that are not entrepreneurs and are primarily non-economics students in bachelor's degree. Students at a first level of university studies (bachelor's degree) acquire general education and are becoming to be acquainted with a specific studying programme. Therefore, the sample is primarily

homogenous due to non-entrepreneurial careers. From the sample of 154 respondents, 11 questionnaires were excluded due to attention mistakes in the loss aversion parameter of Kahneman and Tversky (1992). Data were analysed in PSPP. The moderation analysis was performed via SPSS.

Participants

The final sample is created by 143 participants ($M = 22.9$; $SD = 5.64$). A higher proportion of the sample was represented by women ($N = 117$) and men were represented to a lesser extent ($N = 26$). The sample is homogeneous due to occupation. Respondents in the sample are students that are not self-employed. Most participants finished high school education ($N = 107$), a bachelor's degree ($N = 32$) and a few finished a master's degree ($N = 4$). Most participants did not have an experience with parents' entrepreneurs ($N = 87$), some have or had a mother as an entrepreneur or self-employed ($N = 13$) and some have or had a father as an entrepreneur or self-employed ($N = 43$).

Materials and methods

Traits

Traits were measured by *BSRI – a short version* that measures gender roles. BSRI is originally created from 60 personality traits that are divided into masculine, feminine and neutral traits (Carver 2013). BSRI - short version consists of 12 items. The short version of the inventory used by Carver (2013) and Fernández and Coello (2010) was adapted in this research. Slovak versions of items were adapted from Adamus, Čavojevová and Šrol (2021). Respondents evaluated their feminine and masculine traits on a 7- point Likert scale (*from 1 = „never or almost never true“ to 7 = „always or almost always true“*). Two scores for feminine and masculine traits were created from the answers of respondents, with higher score meaning a higher perceived prevalence of those traits. The value of the Cronbach's alpha was acceptable for feminine traits $\alpha = 0.87$ as well as masculine traits $\alpha = 0.79$.

Theory of planned behaviour - subjective norm, perceived behavioural control, entrepreneurial attitude

Measurement of the *subjective norm* from Kolvereid (1996) was used in this study. Respondents indicated if close individuals (family/friends/other significant individuals for respondent) think that respondents should start an entrepreneurial career. Responses were made on a 7-point Likert scale (*from 1 = completely disagree to 7 = completely agree*). Afterwards, respondents were asked about the weight of those opinions on a 7-point Likert scale, higher score meaning higher weight of opinions. The first three items were re-coded and multiplied with weight. The overall score of the subjective norm was averaged from all items (Kolvereid and Isaksen 2006). The value of the internal consistency of the subjective norm method was acceptable with Cronbach's alpha $\alpha = 0.92$. *Perceived behavioural control* was adapted from Ajzen (2002) and Sheeran and Orbell (1999). The measurement of behavioural control consisted of four items concerning the perceived easiness of becoming a successful entrepreneur. Responses were made on a 5-point scale (*e.g. from 1 = completely disagree to 5 = completely agree*), higher score meaning higher perceived behavioural control. The score was averaged. *The entrepreneurial attitude* was measured by a single item concerning the inclination towards entrepreneurship of respondents. Responses for this single item might range from 0 to 100, higher score meaning higher inclination towards entrepreneurship (Krueger et al. 2000). Slovak versions of measurements of the theory of planned behaviour were adapted from Adamus et al. (2021).

Cognitive biases - positive illusions

The item comprised of the estimation of the correct answers, in the extended version of the cognitive reflection test, compared to the objective accuracy was used to measure overconfidence (Toplak, West and Stanovich 2014, Čavojová 2016). Unrealistic comparative optimism was measured by the adapted Slovak version (Čavojová 2016) of a questionnaire by Kruger and Burrus (2004) consisting of 28 life events with different frequencies (common/rare) and valence (positive/negative). Number four was subtracted from the answers of respondents and then the score was averaged for each subscale. The internal consistency for the unrealistic optimism method was acceptable with Cronbach's alpha $\alpha = 0.62$. A scale consisting of five items was used to measure the illusion of control (Podoyntsyna 2008). The score was created by average. The items focus, for example, on an individual's belief in own ability to predict future market development. A higher score signifies a higher illusion of control. Internal consistency for the whole illusion of control method was acceptable with Cronbach's alpha $\alpha = 0.70$.

Risk attitudes – risk perception, risk propensity, loss aversion

The scale for measuring risk perception followed a case study of a business opportunity. The risk perception scale consisted of four items (Keh et al. 2002). The score from each item was summed. A higher score means lower risk perception. The internal consistency of the risk perception method is acceptable with the Cronbach's alpha $\alpha = 0.67$. Risk propensity was measured by five tasks adapted from the study of Forlani and Mullins (2000). Respondents were selecting between risky or certain alternative. Respondents should indicate what alternative would be preferred by them, for example *a) an 80% chance of winning €400 or b) receiving €320 for sure* (Forlani and Mullins 2000). Risky options were coded as 1 and summed consistently with the previous studies (e.g. Podoyntsyna 2008). Loss aversion was measured by eight tasks created by Kahneman and Tversky (1992) and adapted by Baláž et al. (2013) to the Slovak language. The loss aversion parameter was elicited from these eight tasks. Loss aversion tasks are based on the respondent indicating the sum that would make one *alternative with a 50% probability as attractive as the other with the same probability*. The parameter of loss aversion reached higher values ($\lambda = 2.25$) in Tversky and Kahneman method (1992) in comparison to rational agents. The higher the parameter of loss aversion, higher the loss aversion.

Innovative (leadership) practices

Innovative practices were measured by one subscale, named *challenging the process*, of Leadership practices inventory that particularly reflects innovative practices and initiative (Kouzes and Posner 2013). The Slovak version of scale and its qualities were tested by Pašková, Kaliská and Sollárová (2021). It consists of six items. Respondents for example state, *if he/she seeks out challenging opportunities that test his/her own skills and abilities*. Respondents answer on a 10-point scale (*1 = almost never to 10 = almost always*). The higher score means higher innovative practices of the individual. The internal consistency of the subscale of Leadership practices inventory was acceptable with Cronbach's alpha $\alpha = 0.83$.

Opportunity evaluation and decision to invest in a business opportunity

Opportunity evaluation and decision to invest in the opportunity followed a business opportunity case study. Business opportunity case study and opportunity evaluation scales developed by Keh et al. (2002) were used. Three items on a 7-point scale were used to evaluate the feasibility of business opportunity. The score from each item was summed consistently with the original study. The respondent, for example, states the extent to which, in his/her opinion, the opportunity is feasible (*"I consider X's business plan to be an opportunity"*). The higher

score means a less feasible opportunity. Opportunity evaluation method had acceptable internal consistency with Cronbach's alpha $\alpha = 0.82$.

Then, respondents stated the hypothetical sum they would be willing to invest in that business opportunity, higher sum meaning higher willingness to pursue the business opportunity (Grichnik, Smeja and Welpe 2010). This measurement was adapted from Grichnik et al. (2010) who propose to complement opportunity evaluation with the decision to put resources in the business opportunity, since it may be regarded as a proxy for real decision-making.

Results

Linear relationships between variables were tested via Pearson correlation coefficient r . Relationship between risk perception and opportunity evaluation was examined via Spearman correlation coefficient ρ . Significance level of the Spearman correlation was computed. Beside correlations, the mean and standard deviations of variables are displayed in table 1. Subsequently relationships were analysed via multiple linear regression. Results of multiple linear regression are displayed in table 2 and they are interpreted below the table. Multiple regression was used to understand the contribution of each predictor, thus business creation theories predictors separately. Multiple regression models are tested as a whole and the contribution of each predictor is described.

Table 1: Means, standard deviations and correlations between variables

	<i>M</i>	<i>SD</i>	Innovative practices	Opportunity evaluation	Decision to invest in the opportunity
Gender			0.38	-0.038	0.086
Age	22.90	5.64	0.335*	0.039	-0.187*
Common positive	-0.28	1.04	0.430*	-0.161	-0.090
Common negative	-0.31	0.88	-0.073	-0.189*	0.051
Rare positive	-2.12	1.11	0.326*	-0.029	-0.135
Rare negative	-1.92	0.84	0.030	-0.011	-0.000
Overconfidence	1.74	1.91	-0.047	-0.057	0.072
Illusion of control	3.67	1.07	0.207*	-0.206*	0.253*
Risk propensity	1.22	1.32	0.031	-0.256*	0.189*
Risk perception	13.52	3.37	-0.014	-0.22**	0.264*
Loss aversion	2.15	1.64	0.097	-0.009	-0.182*
Feminine traits	5.38	1.05	0.145	-0.094	0.161*
Masculine traits	4.58	1.08	0.423*	0.098	-0.056
Attitude	5.83	3.12	0.283*	-0.182*	0.074
Subjective norm	-2.80	8.07	0.363*	-0.029	-0.061
PBC	4.31	0.91	-0.177*	0.122	-0.193*

Notes. * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$, $N=143$, PBC = perceived behavioural control, Pearson correlation coefficient r was used, Spearman correlation coefficient ρ was used to test relationship between risk perception and opportunity evaluation

Source: author's own research

Table 2: Multiple regression models

	Dependent variable: opportunity evaluation		Dependent variable: decision to invest in the opportunity		Dependent variable: innovative practices	
	β	t	β	t	β	t
Gender	0.01	0.11	-0.06	-0.70	0.07	0.91
Age	-0.01	-0.13	-0.11	-1.28	0.19*	2.48
Common positive	-0.15	-1.27	0.02	0.19	0.29**	2.68
Common negative	-0.21*	-2.15	0.05	0.49	-0.19*	-2.18
Rare positive	0.05	0.42	-0.19	-1.48	0.00	0.04
Rare negative	0.07	0.63	0.09	0.79	0.07	0.70
Overconfidence	-0.05	-0.58	0.03	0.41	-0.10	-1.33
Illusion of control	-0.06	-0.69	0.10	1.06	0.16*	1.98
Risk propensity	-0.16*	-1.99	0.16	1.86	0.02	0.22
Risk perception	-0.29***	-3.29	0.20*	2.24	-0.14	-1.78
Loss aversion	-0.05	-0.58	-0.10	-1.28	0.03	0.37
Feminine traits	-0.04	-0.53	0.11	1.28	0.11	1.40
Masculine traits	0.18*	2.01	0.02	0.21	0.18*	2.19
Attitude	-0.30**	-2.73	0.15	1.36	0.02	0.16
Subjective norm	0.20*	1.81	-0.21	-1.86	0.17	1.71
PBC	0.06	0.69	-0.16	-1.89	-0.05	-0.69
<i>F-statistics</i>	3.09***		2.52**		5.62***	
<i>R</i> ²	0.28		0.24		0.42	
<i>Adjusted R</i> ²	0.19		0.15		0.34	

Notes. $N = 143$, PBC = perceived behavioural control, common positive/common negative/rare positive/rare negative = unrealistic optimism for common positive/common negative/rare positive/rare negative events, β = standardized regression coefficients, t -values and significance * $p < .05$, ** $p < .01$, *** $p < 0.001$
Source: author's own research

Multiple linear regression was used to test whether business creation theories and, thus, their predictors impact opportunity evaluation, decision to invest in a business opportunity and innovative practices. The results showed that the first model predicting opportunity evaluation is significant at a $p < 0.001$ level ($R^2 = 0.28$, $F(16,126) = 3.09$, $p = 0.000$). One subscale of unrealistic optimism (unrealistic optimism for common negative events), risk attitudes (risk propensity, risk perception), masculine traits and two antecedents in the theory of planned behaviour (attitude, subjective norm) added statistically significantly to the prediction of opportunity evaluation. Strongest predictor was shown to be attitude ($\beta = -0.30$, $p \leq 0.01$), then risk perception ($\beta = -0.29$, $p \leq 0.001$), unrealistic optimism for common negative events ($\beta = -0.21$, $p \leq 0.01$), subjective norm ($\beta = -0.20$, $p \leq 0.05$), masculine traits ($\beta = 0.18$, $p \leq 0.05$) and risk propensity ($\beta = -0.16$, $p \leq 0.05$).

The second model involving the decision to invest in a business opportunity was significant at a $p < 0.01$ level ($R^2 = 0.24$, $F(16,126) = 2.52$, $p = 0.002$). Only risk perception added statistically significantly to the prediction of decision to invest in a business opportunity. Risk perception was a statistically significant predictor of the decision to invest in a business opportunity ($\beta = 0.20$, $p \leq 0.05$).

The third model involving innovative practices is significant at $p < 0.001$ level ($R^2 = 0.42$, $F(16,126) = 5.62$, $p = 0.000$). Two subscales of unrealistic optimism (unrealistic optimism for common positive events, unrealistic optimism for common negative events), illusion of control and masculine traits added statistically significantly to the prediction. The strongest predictors was shown to be unrealistic optimism for common positive events ($\beta = 0.29$, $p \leq 0.05$),

unrealistic optimism for common negative events ($\beta = -0.19, p \leq 0.05$), masculine traits ($\beta = 0.18, p \leq 0.05$) and illusion of control ($\beta = 0.16, p \leq 0.05$).

Exploratory analysis:

Table 4: Moderating effect of age on the relationship between risk perception and decision to invest in a business opportunity

Predictor	<i>b</i> [95% CI]	<i>SE</i>	<i>t</i>	<i>p</i>
Constant	9 929.78 [-18 026.9; 37 886.5]	14 141.46	0.70	0.484
Risk perception	3 303.13 [1 296.9; 5 309.4]	1 014.82	3.25	0.001
Model: $R^2 = 0.07, F(1.141) = 10.59, p = 0.001$				
<i>M-1SD</i>	652.65 [-3 179.56; 4 484.85]	1 907.94	0.34	0.734
<i>M</i>	3 805.76 [-536.54; 8 148.07]	2 112.50	1.80	0.083
<i>M+1SD</i>	3 842.36 [1 214.00; 6 470.72]	1 314.43	2.92	0.005

Notes. Age *M-1SD* (approximately 33. percentile) = 19-20 ; Age *M* (approximately 66. percentile) = 20.1- 22; Age *M+1SD* (up to 100%) = 22.1 - 49, $N = 143$, *b* = unstandardized regression coefficient accompanied by 95% CI (lower, upper limits of a 95% confidence interval), *SE* (standard errors), *t*-values and significance * $p < .05$, ** $p < .01$, *** $p < 0.001$

Source: author's own research

Table 4 displays the results of the moderation analysis. As stated in the table, age significantly moderates the relationship between risk perception and the decision to invest in the business opportunity. Risk perception did significantly predict the decision to invest in the business opportunity on the significance level equal to 0.001 ($b = 3\,303.13; p = 0.001$). Risk perception explains 7% of the decision, $F(1.141) = 10.59, p = 0.001$. Then the effect of age on the relationship between risk perception and the decision to invest in the business opportunity was examined. Age was divided into three groups based on percentile. Results showed that risk perception significantly predict decision to invest in the business opportunity ($R^2 = 0.12, p < 0.01$) predominantly for older individuals ($b = 3\,842.36, 95\% CI [1\,214.00; 6\,470.72], t = 2.92, p < 0.01$). These results mean that lower risk perception leads to a higher willingness to invest in a business opportunity predominantly for older individuals.

Discussion

The goal of this study was to test various theories of business venture creation and to explore what theories are predicting entrepreneurship compared to innovative practices that may rather refer to intrapreneurship. Several business creation theories were tested as the predictors of opportunity evaluation, decision to invest in a business opportunity and innovative practices. Those business theories involve cognitive biases, risk attitudes, traits and theory of planned behaviour.

The first model consisting of cognitive biases, traits, risk attitudes and theory of planned behaviour predicting opportunity evaluation was significant. Above mentioned factors explained 28% of the variance of opportunity evaluation ($R^2 = 0.28, p \leq 0.001$). Among cognitive biases, unrealistic optimism did predict opportunity evaluation. Besides unrealistic optimism also risk perception and risk propensity did predict opportunity evaluation, and

masculine traits, attitudes and subjective norms predicted opportunity evaluation. The strongest predictor was attitude, then risk perception, unrealistic optimism, masculine traits and risk propensity. Results of the study showed that individuals who perceive themselves as having more masculine characteristics evaluated entrepreneurial opportunities less favourably. Gupta, Goktan and Gunay (2014) found that men regarded the same business opportunity as more favourable than women when evaluating a neutral business opportunity. Women evaluated business opportunities with feminine content more favourably, whereas for men the opposite trend was discovered. The criteria in the business opportunity case study (Keh et al. 2002) lacks important information concerning feasibility of business opportunity. Therefore, results may also suggest more accurate evaluation of business opportunity of those with higher perceived masculine traits, since individuals with higher prevalence of masculine traits evaluated business opportunity less favourably. As stated by Swail and Marlow (2018) masculine traits may enable women to navigate through encounters in the business domain. Results of this study suggest that both females and males with more masculine traits may have more accurate evaluation of business opportunity.

The theory of planned behaviour partly explained opportunity evaluation, since subjective norms and attitudes did significantly predict opportunity evaluation. The strongest predictor of opportunity evaluation were attitudes from the theory of planned behaviour. The theory of planned behaviour, a widely used theory in psychology (Krueger and Carsrud 1993), was partially proved, although perceived behavioural control did not impact opportunity evaluation.

The second model was significant and explained 24% of the investment decision in a business opportunity ($R^2 = 0.24$, $p \leq 0.01$). The only predictor explaining the decision to invest in a business opportunity was risk perception, however, the coefficients of the relationship between risk perception and decision to invest in a business opportunity were small. Just the hypothesis concerning risk perception as a predictor was confirmed, thus individuals with lower risk perception are willing to invest more in the business opportunity. Nor cognitive biases, traits or theory of planned behaviour explained the decision to invest in a business opportunity. Impact of the theory of planned behaviour on investing may depend on the context as Lortie and Castogiovanni (2015) noted. It means that even those who perceive themselves as capable of an entrepreneurial career may not finally decide for an entrepreneurial career path with a specific opportunity. From the process perspective on the business opportunity, the theory of planned behaviour does not explain the final decision to realize the opportunity. Maula, Autio, Arenius (2005) investigated the robustness of the theory of planned behaviour in explaining micro-investment. They found that attitude, skills and experience impact investment in a business. Experience in business was considered as an aspect of the theory of planned behaviour since it strongly relates to the perceived ability to invest in favourable alternatives that would lead to returns.

To further scrutinize the relationship between risk perception and decision to invest in a business opportunity, moderation analysis was performed. The results showed that the relationship between risk perception and decision to invest in a business opportunity was moderated by age. Lower risk perception leads to decision to invest in the business opportunity predominantly for those who are older. The significance of risk attitude for venture creation was confirmed by many authors (Stewart and Roth 2001, Brandstätter 2011). Stewart and Roth (2001) found that owners of businesses do have higher risk propensity than managers. Moreover, they found that entrepreneurs focused on growth do have a higher propensity than entrepreneurs focused on providing income. Our results also suggest that for the realization of the business opportunity lower risk perception is required. Among risk attitudes, neither loss

aversion nor risk propensity impacted the decision to invest in the business opportunity, but business domain-specific risk perception. However, the sample was not consistent based on business experience. Business students may perceive risk differently than students of social and natural sciences. Business students are more familiar with the business domain and thus it could affect their risk perception related to the business domain and subsequent decision to invest in the business opportunity.

With regard to the third hypothesis, it was shown that the model is significant. The model involving cognitive biases, traits, risk attitudes and the theory of planned behaviour predictors explained innovative practices. Above mentioned factors explained 42% of the variance of innovative practices ($R^2 = 0.42, p \leq 0.001$). Thus, all business creation theories added foremost to the prediction of innovative practices. When looking at predictors, it was shown that cognitive biases – positive illusions and traits predict innovative practices. Specifically, unrealistic optimism and the illusion of control did predict innovative practices among positive illusions. Among traits it was shown that those individuals who perceive themselves as having masculine features have higher innovative practices. None of the planned behaviour theory antecedents and no risk attitudes did predict innovative practices. Unrealistic optimism appeared to be the strongest predictor of innovative practices, and masculine traits and the illusion of control followed.

The link between cognitive biases – positive illusions and innovative behaviour was discovered by several authors (e.g. Li, Qu, Huang 2011, Grežo 2020). Herz, Schunk and Zehnder (2014) found unrealistic optimism to be positively related to innovativeness. The authors measured unrealistic optimism via Raven's IQ task and unrealistic optimism was measured as the difference between estimated correct answers confronted with real correct answers. Moreover, in this study, the illusion of control proved to be a significant predictor of innovative behaviour. In contrast, overconfidence did not predict innovative practices. In the previous studies, the link between cognitive bias - overconfidence and innovative behaviour was shown to be weaker too. Li et al. (2011) found that overconfidence impacts the innovative behaviour of individuals and individuals with higher self-efficacy are also more confident with their abilities. Overconfidence was measured via knowledge questions and accuracy estimates as in the study of Simon, Houghton and Aquino (2000). Herz et al. (2014) found that judgemental overconfidence is negatively related to innovativeness. The link between overconfidence and innovative behaviour is clarified in the meta-analysis by Grežo (2020), which suggests that there is a rather weak relationship between overconfidence and innovativeness. Traits also explained the innovative practices of individuals in this study. Specifically, masculine traits did predict innovative practices. Menzel, Krauss, Ulijn and Weggeman (2006) discussed if more feminine or masculine traits lead to intrapreneurship. Authors argue that on one hand, a supportive environment is fruitful for new idea development. On the other hand, these qualities should be complemented by masculine determination and focus on the goal. Therefore, the authors assumed that both traits on the medium level are important for intrapreneurship.

Although several business creation theories were tested in this study, there are a variety of other theories that may significantly influence decision-making or innovative behaviour. This study lacks detailed measurement of factors like business experience or family entrepreneurial background which are factors grouped in the human capital theory framework proposed by Unger, Rauch, Frese and Rosenbusch (2011). Outcomes of human capital like skills or knowledge are also beyond the scope of this study. Future studies may apply more refined measures of family entrepreneurial background as in the study of Alessandri, Mammen and Eddleston (2018), which measured not only entrepreneurial experience of parents but also other

family members. Comparable levels of entrepreneurial experience in the sample are estimated by the field of study, however students may have acquired different levels of knowledge or skills from the business domain. Other studies may therefore examine the effect of skills and knowledge on business decision-making. Other factors that may be tested are personality traits like in the study of Espiritu-Olmos and Sastre-Castillo (2015), that examined other personality factors like neuroticism or extraversion not risk solely.

Even though self-reported scales are frequently used for innovative behaviour measurement, some methods for measuring innovative behaviour combine self-reports with ratings of others (De Jong and Hartog 2008). Since, the respondents in this study originated from various backgrounds, self-reported scale was regarded as adequate for this study. Future studies may apply a multidimensional perspective on innovative behaviour measuring two dimensions of innovative behaviour like idea generation and idea implementation (Krause 2004, De Jong and Hartog 2008). Methods dependent on hypothetical decision-making, like hypothetical business opportunity case study evaluation and subsequent decision, may also limit external validity of results. However, hypothetical decision-making was shown to be an appropriate proxy for real decision-making (Grichnik et al. 2010). Last limit is stemming from the sample of students, who's field of study or university degree vary in this study. Reliability of results may be raised by business creation theories testing on samples of entrepreneurs or self-employed. Models may be tested further on another sample, like start-up entrepreneurs as compared to self-employed, similarly as in the study of Stewart and Roth (2001) or commercial entrepreneurs and social entrepreneurs, consistently with the study by Hietschold and Voegtlin (2021).

Conclusion

The link between entrepreneurial education and entrepreneurial intention is explained by two approaches in the literature. First approach is human capital theory, meaning skills and knowledge and the second one is entrepreneurial self-efficacy (Bae, Qian, Miao and Fiet 2014). As suggested in the review of Nabi, Liñán, Fayolle, Krueger and Walmsley (2017), there are several pedagogical approaches used in the entrepreneurship education, however cognitions are not completely addressed in entrepreneurial education research, even though there may be the link between cognitions and entrepreneurial intention.

This study therefore examined not only the link between prominent theories like theory of planned behaviour on entrepreneurial intention, but also the impact of some traits, cognitive biases and risk attitudes on entrepreneurial intention. Overall results showed that risk attitudes may be the factor distinguishing those who may start a business from others as proposed by Palich and Bagby (1995). Individuals may be subject to cognitive biases and may hold more masculine qualities, but they may not necessarily start a business. Cognitive theory, as well as traits, are thus not sufficient to explain business creation, however, they explain innovative practices of individuals. Besides cognitive theories and traits, risk propensity as well as risk perception predicted opportunity evaluation. The theory of planned behaviour was also shown to predict opportunity evaluation and among all predictors, subjective norms and attitudes significantly predicted perceived feasibility and desirability of a business opportunity. However, in the final phase based on the decision to invest in a business opportunity, solely risk perception did predict the decision to invest in the business opportunity. Therefore, as suggested by Nabi and Liñan (2013), risk perception should play a more crucial role in entrepreneurship education.

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