TO BE OR NOT TO BE AN ENTREPRENEUR? ENTREPRENEURIAL TENDENCIES AND FUTURE ORIENTATION AMONG MALE AND FEMALE INFORMATION-SYSTEMS STUDENTS

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ABSTRACT

Purpose: *This paper examines the mechanism through which entrepreneurial education affects entrepreneurial behaviors, and particularly the way it interplays with individual's control beliefs (self-efficacy) and future orientation.*

Design/Methodology/Approach: *We distributed an online questionnaire comprised of three parts in line with an extended version of the TPB model. 230 students of Industrial Engineering and Management in a state funded college and university. Data was analyzed with SPSS software.*

Findings: *There are significant differences between male and female students in their future orientation, and perceptions of entrepreneurship feasibility. Practical implications: We advise educators to pay greater attention to the psychological barriers stopping women from fully realizing their entrepreneurial potential.*

Originality/Value: *We expand on the theory of planned behavior to highlight the importance of domain-specific self-efficacy and future orientation in predicting male and female students' choices of a final project. Focusing on the choices and reasoning of young entrepreneurs allows for an in-depth understanding of the relationship between education and practice.*

Keywords: Entrepreneurial Intent, Future Orientation, Entrepreneurial Education, Gender, TPB.

INTRODUCTION

Creative thinking, improvisation, and a proactive attitude towards problem-solving are key competencies allowing for adaptive learning and reliable performance. But why, despite having an entrepreneurial mindset, students differ in their entrepreneurial behavior? The management literature still debates the question of the effect of entrepreneurship education programs' (EEPs) on participants' attitudes and intention toward entrepreneurship (Fayolle & Gailly, 2015; Piperopoulos & Dimov, 2015). Evidence shows that students participating in entrepreneurship education show an increase in positive attitudes towards entrepreneurship and behavioral control. They also demonstrate higher entrepreneurial intentions at the end of the program (Rauch & Hulsink, 2015; Hockerts, 2018). However, while raising the positive perception of entrepreneurship is important, intentions do not always result in behavior (Rauch & Hulsink, 2015; Nowiński et al., 2019). We, therefore, need to look closer at the mechanism through which entrepreneurial education affects entrepreneurial behaviors, and particularly the

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way it interplays with individual's control beliefs (self-efficacy), and future orientation (Piperopoulos & Dimov, 2015). Existing entrepreneurship literature maintains that people are more likely to pursue an entrepreneurial career when they have obtained sufficient experience, knowledge, and resources (Davidsson, 2006). If so, young entrepreneurs who often lack any prior background knowledge and professional or entrepreneurial experience face significant hurdles in putting their entrepreneurship aspirations into use (Hulsink & Koek, 2014). In addition to their inexperience, their education tends to be generic, rather than industry-specific (Hulsink & Koek, 2014).

The focus of this exploratory paper is on youth entrepreneurship and the specific choices of students in the department of Industrial Engineering and Management to execute a final project that requires them to mimic and simulate what entrepreneurs do. We study an actual measure of entrepreneurial behavior rather than intentions or perceptions (Rauch & Hulsink, 2015). We examine separately and interactively the effect of personal attitudes toward entrepreneurship, subjective norms, and perceived behavioral control, as three intention antecedents recognized by the theory of planned behavior (TPB). To expand the TPB, we also consider the influence of future orientation on one's entrepreneurial behavior. Future orientation is generally concerned with individuals' tendency to engage in future thinking (Seginer, 2009). Most specifically, it considers the images that individuals develop regarding the future, as consciously represented and self-reported (Seginer, 2009). The motivational underpinnings of future thinking assume that individuals' tend to perceive behavior carried out in the present as instrumental or leading to the pursuit of a future goal. If so, students' instrumentality of their academic achievement and experience can carry weight in the pursuit of a professional career or the development of specific skills. Their choice of a final project, therefore, signals an understanding that one must initiate a chain of means-ends activities to attain a distant goal (to be an entrepreneur or to make use of entrepreneurial skills). By adding the construct of future orientation to the study of entrepreneurial predispositions and intentions, we are better equipped to understand students' choices, and more so the way they envision their futures as entrepreneurs. This could alert educators to both objective and psychological barriers stopping students from fully realizing their entrepreneurial potential.

Finally, the paper contributes to an enhanced understanding of the interplay between enterpreneural education, intentions and gender. This is an important issue since previous studies indicated that women, including female students, display lower entrepreneurial intentions than men (Fischer et al., 1993; Sullivan & Meek, 2014). However, research provides mixed evidence as to whether female students gain from entrepreneurship education, with respect to enterprenural intentions and actual behaviours (Bae et al., 2014; Westhead & Solesvik 2016; Nowiński et al., 2019). The relationship between enterprenural education and enterprenural intentions and behavior can be explained by involving additional variables, such as entrepreneurial self-efficacy (ESE), and future orientation.

WHY FOCUS ON THE FINAL PROJECT?

An entrepreneurial mind-set is often defined as a capacity to

1. Identify solvable problems.
2. Conclude reality.
3. Create innovative solutions.
4. Confidently present a workable idea (Townsend et al., 2010).

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These four capabilities are exemplified in the students' fourth year, as they dedicate a significant portion of their school year to completing their project and presenting their work to a panel of expert judges. The final project is domain-specific and designed to teach the students to mobilize human, social, and even financial capital to complete their ventures. Tapping students' reasoning while still in school can Help educators adjust their programs so to assist students in shaping a realistic understanding of entrepreneurship..

THEORETICAL BACKGROUND

The theory of planned behavior (Ajzen, 1988, 1991) has emerged as most influential in predicting entrepreneurial intentions among students (e.g., Souitaris et al., 2007; Krueger, 2017; Schlaegel & Koenig, 2011; Rauch & Hulsink, 2015). The theory postulates that intentions can predict planned behavior. Shepherd & Krueger (2002) contend that 'intentions-based models have been successful in investigating the cognition of individuals and their resultant behavior' and, as such, they offer a good framework to explain entrepreneurial intentions (Krueger, 2017). The theory of planned behavior posits that intentional behavior is guided by three types of consideration: beliefs about the likely consequences or other attributes of the behavior (behavioral beliefs), beliefs about the normative expectations of other people (normative beliefs), and beliefs about the presence of factors that may further or hinder performance of the behavior (control beliefs) (Ajzen, 2002). In other words, intentions to pursue a course of action depends on the persons' perceptions of personal and social desirability, as well as confidence in their ability to successfully perform the tasks involved (Florin et al., 2007). TPB persuasively shows that training programs can modify attitudes, as well as highlight the importance of the perceived feasibility and desirability felt by individuals in their willingness to transform attitudes into behaviors (Florin et al., 2007). In the context of entrepreneurship, Florin et al. (2007) specified a construct called a proactive disposition, that in their opinion can explain entrepreneurial behavior, and demonstrates a close affinity to TPB's tripartite attitude. Proactive behavior in organizational contexts has been defined as *"an individual's initiative to improve on or to create entirely new circumstances"* (Florin et al., 2007: 23). Socialization, feedback seeking, innovation, career management, and stress coping are a few examples of displaying such a proactive predisposition. It complements the TPB model by offering a construct that is centered on 'doing' rather than 'perceiving' or 'intending.' Alas, in the realm of entrepreneurship, the entrepreneurial drive may bear a strong relationship to individuals' future orientations. The image individuals have about their future, as consciously represented and self-reported (Seginer, 2009) often provides the grounds for setting goals, planning, exploring options and making commitments that guide the person's behavior and developmental course (Bandura, 2001; Ajzen, 2002). Alas, future orientation complements the TPB model by considering the model of the future that persons envision for themselves and act upon, as a determinant of entrepreneurial behavior.

In this paper, we focus on the motivational aspects of future orientation as derived from Nuttin & Lens' (1985) work. And so, we focused on constructs that are considered specific, concrete, and goal-oriented, rather than just self-enhancing. Research ensuing from the early work of Nuttin & Lens (1985) address two questions: the relation between perceived instrumentality and achievement motivation, and the nature of the conditions that facilitate or hinder perceived instrumentality (Simons et al., 2004; Hoyle & Sherrill, 2006). These studies show that perceived instrumentality is linked to choices made while in school, as well as to academic achievement even among low achieving students placed in vocational schools (See

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also Creten et al., 2001). They have also shown that although perceived instrumentality has a positive effect on several behavioral indicators, this effect is moderated by attitudes toward the future and the nature of the present task. Inquiring into a person's future orientation is especially relevant for individuals in times of developmental, personal, and cultural transitions that require preparations for what lies ahead (Seginer, 2008). Much like the TPB, the motivational component in the future orientation conceptualization subsumes three variables that describe individuals' drive to invest in domain-specific future thinking: the value of expected behavior outcomes (utility), the subjective appraisal of their attainability (desirability) (Carver & Scheier, 2001), and internal control over the fulfillment of personal hopes, plans and goals (feasibility) (Seginer, 2009). The behavioral component consists of two variables. The first is the exploration of future options by seeking advice and gathering information from others and probing their suitability for oneself. The second is committing to one specific option via a process of decision making.

Entrepreneurship is often viewed as an accessible sphere where personal effort determines the reward (Kanazawa, 2005). However, Marlow & Patton (2005) found that access to resources (such as business funding) is biased towards men, and Ahl & Marlow (2012) suggest that entrepreneurship is a discourse where persistent and occluded gender bias happens. Minniti & Naudé (2010) indicate that women and men have different socioeconomic characteristics and, if we were to correct for factors such as education, wealth, family and work status, those differences would disappear. Greene & DeBacker (2004) claim that people's imaginings of the future are strongly influenced by sociocultural factors, such as sex role prescriptions and other norms and expectations that mark the particular context in which one lives. If so, commonly observed, gender differences might influence the content of future goals, with regards to entrepreneurship, as well as future orientations. In our study, we ask whether women and men differ in their preference for innovation, proactive predisposition, and achievement motivation, a moment before they enter the entrepreneurship industry. Based on the theoretical background presented here, we tested four hypotheses.

HYPOTHESIS

H1: Students who chose an entrepreneurial project will exhibit a higher preference for innovation, and a higher proactive disposition, than those who chose an organizational project.

H2: Students who exhibit a strong preference for innovation will also exhibit a strong proactive disposition, a strong achievement motivation, and a strong sense of domain-specific self-efficacy.

H3: Students who exhibit a strong preference for innovation will tend to see themselves as founders of their businesses, entrepreneurs in a small company, or developing new ground-breaking technologies. They also see themselves working in firms that emphasize a sense of accomplishment.

H4: Women and men will differ in their preference for innovation, proactive predisposition, and achievement motivation.

INSTRUMENT DEVELOPMENT

We distributed an on-line questionnaire comprised of three parts in line with the TPB model. The first part included demographic variables (e.g., sex, age, previous employment, income). The second part includes entrepreneurial inclination measures, namely, preference for innovation, proactive disposition, and achievement motivation. These reflected both attitudes

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towards entrepreneurship, a preference for innovation, and the reasons for choosing a project designed to tap the participants' subjective norms. We established reliabilities of the scales using Cronbach's alpha to determine the extent to which the measures were internally consistent. Proactive disposition Cronbach's alpha reliability coefficient is R=0.831. Following the TPB model, domain-specific self-efficacy (Cronbach's alpha reliability coefficient was found to be relatively low R=0.582). In addition, a general measure of self-efficacy was measured as a person's general belief and confidence in his capabilities to meet the demands related to a certain task. In our case, the Cronbach's alpha reliability coefficient was R=0.864. Together they constitute a person's perceived behavioral control. The Reasons for choosing a project comprised of twenty-five questions relating to reasons for choosing a certain project were factor analyzed using principal component analysis with Varimax (orthogonal) rotation. The analysis yielded five factors explaining a total of 66.7% of the variance for the entire set of variables. We kept three factors. Factor 1 was labeled market pull due to the high loadings by the following items: *"I chose a project that would be advantageous in the marketplace"; "I chose a project that is considered prestigious by prospect employers"; "I chose a project that exhibits skills that are in great demand in the marketplace".* This first factor explained 16.8% of the variance. The second factor was labeled pragmatic reasons for choosing a project. This factor was labeled as such due to the high loadings by the following factors: *"I chose a project that fitted with my friends' choice of a project", "I chose a project that demands the least number of working hours", "I chose a project supervised by a professor I am familiar with", "I chose a project based on prior courses that I took".* This factor explained 11.7% of the variance. The third factor was labeled "independence of organizations" due to the high loadings by the following factors: *"I wanted a project in which I am not bounded to any organization," I chose a project where I am not bounded to an organizational liaison or client."*

The third part included questions about the students' future orientation. In this study, the future orientation questionnaire that was developed by Seginer et al. (1991) was shortened to fit our objectives. Future orientation focused on the work domain. As in the original questionnaire, higher education was regarded as a near future domain, and work and career as distant future domains. The motivational component of the future orientation subsumes three variables:

1. The value of a prospective life domain (Eccles & Wigfield, 2002).
2. Perceptions of success.
3. General positive feelings (Carver & Scheier, 2001).

The first part of the questionnaire about Future orientation contained nine questions asking respondents to report where they would like to see themselves in the future, in terms of work. These nine questions were factor analyzed using principal component analysis with Varimax (orthogonal) rotation. The analysis yielded three factors explaining a total of 52.5% of the variance for the entire set of variables. We kept two. Factor 1 was labeled *"Establish my own business"* due to the high loadings by the following items: *"In the future I see myself establishing my own business", "In the future I see myself running my firm", "In the future I see myself as an entrepreneur working in a small start-up".* This first factor explained 20.37% of the variance. Factor 2 was labeled *"Management roles"* due to the high loadings by the following items: *"In the future, I see myself a highly ranked manager in a big firm," "In the future, I see myself an HR manager"; "In the future, I see myself a QA manager."* This factor explained 17.3% of the variance. The second part of the Future Orientation questionnaire contained 19 questions and asked respondents to indicate the extent to which each of the following is of importance to them

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in the work environment: high salary, human relations, job security, and stability, or self-realization through work. Cronbach's alpha reliability coefficient for this measure was R=0.882.

A Factor analysis using principal component analysis with Varimax (orthogonal) rotation yielded three factors explaining a total of 83.7% for the entire set of variables. Factor 1 was labeled *"working conditions"* due to the high loadings by the following items: *"I would like to work in a place where there is a friendly atmosphere", "I would like to work in a unit that is well managed", "I would like to work in a place that fosters worm relationships with the boss".*

Based on the TPB model, we considered two types of dependent variables. The first was a choice of the final project. The second is a preference for innovation. We measured students' preference for innovation by using Florin et al's. (2007) instrument named the *'Entrepreneurial Drive Questionnaire.'* The questionnaire contains 42 items Preference for innovation was measured on a Likert-type scale ranging from 1 (low) to 5 (high). (Cronbach's alpha reliability coefficient is R=0.797, non-conformity (Cronbach's alpha reliability coefficient is R=0.684). This is a perceptual type of variable designed to tap into participants' entrepreneurial intentions. The dependent variable was based on one question asking participants to report their choice of a project, organizational or entrepreneurial.

DESIGN

At the end of their third year, students in Information Systems (IS) concentration are required to choose a specialty and begin work on their final projects. Before their choice, all students are given detailed instructions as to the composite of their studies and the requirements for the completion of an applied group project. Students choosing the IS specialization can choose one of two types of projects, organizational and entrepreneurial. The first requires the students to come up with a computational solution to organizational inefficiency. The latter requires them to come up with an idea for an application that is both new and innovative. We distributed an online questionnaire to a convenient sample of 202 students specializing in Information Systems as part of their undergraduate program in Industrial Engineering. However, only 150 respondents completed all questions in the questionnaire by the time of data collection. It is noteworthy that students are often used as a sample in the entrepreneurship literature since they present a heterogeneous group, regarding preferences and intentions before the fulfilment of that behavior (Mirjana et al., 2018). The survey was distributed using the Qualtrics online survey program. An anonymous link to the survey was sent to the students' mail addresses by the schools' secretary and was available for a month. The researchers could not know which of the students declined participation in the survey. The cover letter asked the students to participate in the study and stated that participation was anonymous and completely voluntary.

FINDINGS

Descriptive Statistics

Two hundred and two (202) students responded to the distributed on-line link of the questionnaire. The students' average age is 26.85, Sd=3.29. One hundred twenty-seven female students and 75 male students responded to the questionnaire. 125 (53%) of the respondents were students in a publicly funded college, 77 (32.6%) of the respondents were university students [also publicly funded]. Ninety students (57.3%) reported having been working in a job related to

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their study field, while still in school. One hundred fifty respondents completed most questions in the questionnaire.

Sixty-eight respondents chose an entrepreneurial project, while 64 chose an organizational project. Nineteen respondents did not report their choice and were excluded from the sample. University students were more likely to choose an entrepreneurial project (N=36, 52.9%), then College students (N=32, 47%). X2 (2, N =148)=17.353, p<0.01. A Chi-square test revealed a statistically significant association between gender and the choice of a final project. Out of 68 students who chose an entrepreneurial project, 47 were male (71%), while only 21 students were female (29.9%). Out of the 64 students who chose an organizational project, 34 were male (53%), while 30 were female (46.9%) (2, N=144) =4.02, p<0.05. Phi and Cramer's V were 0.175, indicating a strong association between gender and a choice of a project. We asked students for the reasons underlying their choice of a project. An independent-samples t-test was conducted to compare College and University students in the reasons compelling them to prefer one type of project over another. University students (M= 4.72, SD= 1.41) were significantly more likely than college students (M=4.07; Sd=1.72) to choose an entrepreneurial project because they expected it to challenge their abilities t(-2.467)= 1.557, p=000. They were also more likely than college students (M=4.27; Sd=1.45) to choose a project they were confident they can succeed in (M=5.02; Sd=1.45) t(-2.983)= 0.030, p=000.

An independent t-test to test the effect of institution type (college or University) on students' proactive disposition, preference for innovation, and domain-specific self-efficacy. The analysis revealed no significant differences between college and university students in all three variables. No differences were found between college and university students in their future orientations. Next, an independent-samples t-test was conducted to compare students' reasons for choosing a project of a specific type. Compared to students who chose an organizational project (M=2.17; std.1.507), those who chose an entrepreneurial project were more likely to do so in the hope of it better preparing them to start their own business in the future (M=2.99; std.1.73); t (130)=-3.088, p=0.02. Moreover, those who chose an entrepreneurial project were more likely to do so in the hope of it better preparing them to write a patent claim in the future (M=2.79; std.1.5); t (130)=-2.595, p=0.01 than those choosing an organizational project (M=1.95; Std=1.47). Table 1 presents the participants' demographic characteristics.

Table 1
DEMOGRAPHICS

Criterion	No of Respondents	% of Respondents
Age	N=236, M=26.85, Sd=3.29	
Gender	N=202	
Male	75	37
Female	127	63
Academic Institution	N=201	
Publicly funded college	124	53
University students	77	33
Working while Studying in a Related Job	N=236	
working	90	68.2
Not working	43	18.2

HYPOTHESIS TESTING

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H1: Students who chose an entrepreneurial project will exhibit a higher preference for innovation, and a higher proactive disposition, than those who chose an organizational project.

We hypothesized that a preference for innovation would predict the students' choice of a project (organizational or entrepreneurial). Our prediction was not confirmed. As Table 2 indicates, no differences were found between those who chose an organizational project and those who chose an entrepreneurial one on any of the independent variables in this study (proactive disposition, achievement motivation and a preference for innovation). This finding perhaps indicates the students' perceived entrepreneurial tendencies as ones that could be realized in both types of projects. And so, we proceeded to profile entrepreneurial tendencies based on the reasons for choosing a project type. We found that a preference for innovation was positively correlated with choosing a project that was thought as challenging, [r(129)=0.247, P<0.001]; and had a strong market pull [r(129)=0277, P<0.001]. Moreover, preference for innovation was positively correlated with choosing a project that allows for imagination [r(128)=0.228, P=0.000], and would possibly produce a patent [r(128)=0.199, P=0.000].

H2: Proactive disposition, achievement motivation, and self-efficacy will predict students' preference for innovation.

We hypothesized that students who exhibit a strong preference for innovation, will also exhibit a strong proactive disposition, a strong achievement motivation, and a high self-efficacy). Multiple linear regressions were calculated to predict students' preference for innovation based on various demographic variables: age, sex, institution (university, college), proactive disposition, and achievement motivation. As Table 2 indicates, the results of the regression indicated that two predictors explained 79% of the variance [F(6,119)=74.564, P<001] with R^2 Of 0.790. It was found that a proactive disposition significantly predicted preference for innovation (β=0.496 p<.001), as did domain specific self-efficacy (β=-0.296, p<0.01), and general self-efficacy (β=-0.294; p<0.01). Achievement motivation, gender, and institution types were not predictive of preference for innovation. Our prediction was only partially accepted.

Table 2
MULTIPLE LINEAR REGRESSION PREDICTING STUDENTS' PREFERENCE FOR INNOVATION

	Unstd Coefficients		Std Coefficients	t	Sig.
Model	**B**	**Std. Error**	**Beta**		
(Constant)	0.122	0.242		0.502	0.616
Proactive disposition	0.538	0.053	0.634	10.219	0
Achievement motivation	0.196	0.055	0.216	3.581	0
Self-Efficacy	0.208	0.069	0.148	3.009	0.003
Gender	-0.016	0.046	-0.016	-0.351	0.726
R^2 = 0.790					

H3: Students who exhibit a strong preference for innovation will see themselves as future entrepreneurs.

More specifically, students who exhibit a strong preference for innovation will tend to see themselves as founders of their businesses, entrepreneurs in a small company, or developing new ground-breaking technologies. They also see themselves working in firms that emphasize a sense of accomplishment.

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This hypothesis is concerned with the students' future orientation. Specifically, we examined whether a preference for innovation predicts a future orientation as an entrepreneur. First, a Pearson correlation coefficient was computed to assess the relationship between these three aspects of future orientation and students' preference for innovation, a proactive disposition, and domain-specific self-efficacy. There was a positive correlation between 'aspiring to found a business' and domain-specific self-efficacy (r=0.221, n=128, p=0.012). Aspiring to find a business was also positively correlated with achievement motivation (r=0.200, n=128, P=0.024), having a proactive disposition (r=0.205); having a preference for innovation (r=0.244). A multiple linear regression was calculated to predict students' preference for innovation based on three aspects of future orientation: *"In the future, I see myself founding my own company"; "in the future, I see myself working as an entrepreneur in a small company"; "in the future, I see myself developing new and ground-breaking technologies"*. The results of the regression indicated that two predictors explained 6.3% of the variance [F(3,124)=2.755 P<001]. It was found that only a wish to found a company significantly predicted preference for innovation (β=0.496 p<0.001), as did domain specific self-efficacy (β=0.103, p<0.01). Second, a multiple linear regression was calculated to predict students' wish to found their own company, based on students' preference for innovation, proactive disposition, achievement motivation, and domain-specific self-efficacy. The results of the regression indicated that self-efficacy explained 10.4% of the variance [F(4,123)=3.584 P<001] with R^2 of 0.104. It was found that self-efficacy significantly predicted wishing to found a business (β =0.825 p<0.001).

We then proceeded to predict a person's desire to manage a firm. Multiple linear regression was calculated to predict a persons' desire to manage a firm as a dimension of participants' future orientation. Our prediction was based on various variables: proactive disposition, preference for innovation, achievement motivation, and a sense of accomplishment. A proactive disposition predict wishing to act as a general manager in a firm [F(6,119)=10.664, P<0.01] with R^2 of 0.350, β=0.036 p<0.001), as well as a tendency for conformity (β=0.031, p<0.001).

And so, we can conclude that having a proactive disposition was a predictor of both starting one's own business, and acting as a general manager. Self-efficacy was found predictive of starting one's own business, but not predictive of acting as a general manager.

H4: Women and men will differ in their preference for innovation, proactive predisposition, and achievement motivation.

Results of the independent sample t-tests indicate that there were no significant differences between man and women in their preference for innovation (t(126)=2.459, p=0.304), nor in proactive disposition, (t(126)=0.973, p=0.54), or in achievement motivation (t(126)=3.341, p=0.070). However, women and men differed in their sense of domain-specific self-efficacy (t(126)=1.904, p=0.02). On average, women's sense of domain-specific self-efficacy (M=2.9; std=0.556) was significantly lower than men's (M=3.05; std=0.305). It is notable that no significant difference was found between men (M=3.7, std=0.37) and women (M=3.66; std=4.9) in their general sense of self-efficacy. Differences were also found in men's and women's future orientation, and more specifically in their wish to start a business (t(126)=1.863, P<0.000). Men were significantly more inclined to see themselves starting a new business (M=3.35, std=1.143) than women (M=2.61, Std=1.306). Compared to their male counterparts (M=2.81, Std=0.89), women were significantly less willing to see themselves as entrepreneurs in a small business (M=2.21; std=1.048) (t(147)=2.955, P<0.000). They were also

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significantly more inclined to see themselves as Human Resources managers (M=2.28, Std=1.32) than men (M=1.80, Std=0.84) (t(147)=16.235, P<0.000) (Table 3).

Table 3
T-TEST ANALYSIS TO DETERMINE DIFFERENCES BETWEEN MEN AND WOMEN IN FUTURE ORIENTATION WITH REGARDS TO ENTREPRENEURSHIP

Model	Gender	N	Mean	Std. Error Mean	Std. Deviation
Patent registering	M	92	2.45	1.626	0.170
	W	57	2.21	1.589	0.211
Establish firm	M	92	2.87	1.799	0.188
	W	57	1.88	1.135	0.150
Employment security	M	76	3.79	0.869	0.100
	W	48	4.15	0.772	0.111
Entrepreneur in a small firm	M	92	2.83	0.897	0.094
	W	57	2.21	1.048	0.139

We performed a linear regression to predict participants' vision of themselves as entrepreneurs based on self-efficacy, having a preference for innovation, proactive predisposition, achievement motivation, independence from organization and gender ($F(6,121)=5.762$, $p<0.001$, $R^2=0.222$). The analysis revealed that domain self-efficacy ($\beta=0.598$; $t=-2.359$, $p=0.020$), independence of organization (Beta=0.257; $t=2.632$, $p<0.000$) and gender ($\beta=-0.667$; $t=-4.036$, $P<0.000$) were significant predictors in the model. Similarly, when attempting to predict a person's wish to start their own business based on these same independent variables, the only significant predictor was gender ($F(6,121)\beta=-4.388$, $p<0.001$, $R^2=0.179$). These findings show that despite having similar entrepreneurial tendencies and education, women were less inclined to see themselves as self- employed, which might have led them to prefer an organizational project where they could acquire and practice the skills they imagined would be useful as employees.

DISCUSSION AND CONCLUSION

This paper presents a detailed empirical investigation of the entrepreneurial behavior of Industrial Engineering students in a state-funded college and two universities. We employed the theory of planned behavior (TPB), to study students' choices of a final project. According to TPB, behavior (choosing a Final project) is regarded as resulting from attitudes (preference for innovation and having an active predisposition), perceived behavioral control (self-efficacy), and subjective norms (the educational value of the project). While choosing a final project was not predicted on entrepreneurial intentions, we did find that students whose future orientation pointed to a keen interest in entrepreneurship chose a final entrepreneurial project. In so doing, they were perhaps hoping that the experience gained while working on the project will better prepare them to launch their own business and develop groundbreaking technologies. This finding highlights the importance of an instrumental future orientation in choosing a final project, as well as choosing a career path. In our study, future orientation predicted students' choice better than having entrepreneurial tendencies.

Another important finding is the differences we found between male and female students in domain-specific self-efficacy and future orientation. These findings are congruent with studies

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conducted both in Israel, Europe and in the U.S demonstrating that women have less confidence in the types of skills and abilities required to launch a firm (Coleman & Kariv, 2013; Nowiński et al., 2019). For women perceived feasibility of becoming an entrepreneur is of great importance since women often face greater difficulties than men in entering the labor market, and recruiting financial, informational and social resources for setting up businesses, (Heilbrunn & Kushnirovich, 2007; Coleman & Kariv, 2013; Kushnirovich et al., 2018). Our finding is even more striking since female and male students were no different in their preference for innovation, proactive disposition, and achievement motivation. Our finding perhaps reflects our female participants' realistic assessment of their chances to succeed as entrepreneurs in the Israeli market. And so, for male students, perception of desirability carried more weight than perceptions of feasibility. Female students, on the other hand, conceptualized self-efficacy as separate from actual entrepreneurial behaviors; hence they gave more weight to the critical factors such as feasibility and opportunity (Esfandiar et al., 2019). According to the latest report of the Israeli Ministry of Economy and Industry, women constitute only 26.6% of all owners of small businesses. Over 70% of the businesses are solo entrepreneurs who do not employ any workers, while this is true for 63% of the small businesses owned by men (Ministry of Economy and Industry, 2018)[1]. In 2016, the Adva Center published a report demonstrating the many hurdles faced by women entrepreneurs in Israel. According to the report, women's businesses tend to concentrate on the services sector-90% of women-owned businesses are in services. Gender income gaps among self-employed persons are especially high: in 2014, self-employed women earned, on average, only 45% of the earnings of self-employed men. Policies promoting women's small entrepreneurship usually target the typical obstacles women entrepreneurs face: limited access to credit, lack of business experience, difficulties in obtaining business training, and consultancy (Buzaglo, 2016)[2]. Our study highlights the importance of future orientation as a motivator for pursuing entrepreneurial tendencies. Aside from having policymakers address the structural barriers that make entrepreneurial behaviors riskier and less rewarding for women, we advise educators to pay more considerable attention to the psychological barriers stopping women from fully realizing their entrepreneurial potential.

REFERENCES

Ahl, H., & Marlow, S. (2012). Exploring the dynamics of gender, feminism, and entrepreneurship: advancing debate to escape a dead end? *Organization*, *19*(5), 543-562.

Ajzen, I. (1988). Attitudes. *Personality and Behavior*, 134.

Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, *50*(2), 179-211.

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of applied social psychology*, *32*(4), 665-683.

Bae, T.J., Qian, S., Miao, C., & Fiet, J.O. (2014). The relationship between entrepreneurship education and entrepreneurial intentions: A meta–analytic review. *Entrepreneurship theory and practice*, *38*(2), 217-254.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual review of psychology*, *52*(1), 1-26.

Carver, C.S., & Scheier, M.F. (2001). *On the self-regulation of behavior*. Cambridge University Press.

Coleman, S., & Kariv, D. (2013). Gender, performance and financial strategy: A dynamic capabilities perspective. *Journal of Developmental Entrepreneurship*, *18*(03), 1350020.

[1]Retrieved from https://www.sba.org.il/hb/PolicyAndInformation/Documents/yazamut_nashim.pdf

[2]Retrieved from http://adva.org/wp-content/uploads/2017/02/%D7%A2%D7%A1%D7%A7-%D7%9E%D7%A9%D7%9C%D7%94-1.pdf

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Creten, H., Lens, W., & Simons, J. (2001). The role of perceived instrumentality in student motivation. In: *Trends and prospects in motivation research* (pp. 37-45). Springer, Dordrecht.

Davidsson, P. (2006). Nascent entrepreneurship: empirical studies and developments. *Foundations and Trends® in Entrepreneurship*, *2*(1), 1-76.

Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual review of psychology*, *53*(1), 109-132.

Esfandiar, K., Sharifi-Tehrani, M., Pratt, S., & Altinay, L. (2019). Understanding entrepreneurial intentions: A developed integrated structural model approach. *Journal of Business Research, 94*, 172-182.

Fayolle, A., & Gailly, B. (2015). The impact of entrepreneurship education on entrepreneurial attitudes and intention: Hysteresis and persistence. *Journal of small business management*, *53*(1), 75-93.

Fischer, E.M., Reuber, A.R., & Dyke, L.S. (1993). A theoretical overview and extension of research on sex, gender, and entrepreneurship. *Journal of business venturing*, *8*(2), 151-168.

Florin, J., Karri, R., & Rossiter, N. (2007). Fostering entrepreneurial drive in business education: An attitudinal approach. *Journal of management education*, *31*(1), 17-42.

Greene, B.A., & DeBacker, T.K. (2004). Gender and orientations toward the future: Links to motivation. *Educational Psychology Review*, *16*(2), 91-120.

Heilbrunn, S., & Kushnirovich, N. (2007). Immigrant and indigenous enterprises: similarities and differences. *International Journal of Business Performance Management*, *9*(3), 344-361.

Hockerts, K. (2018). The effect of experiential social entrepreneurship education on intention formation in students. *Journal of Social Entrepreneurship, 9*(3), 234-256.

Hoyle, R.H., & Sherrill, M.R. (2006). Future orientation in the self-system: Possible selves, self-regulation, and behavior. *Journal of personality*, *74*(6), 1673-1696.

Hulsink, W., & Koek, D. (2014). The young, the fast and the furious: a study about the triggers and impediments of youth entrepreneurship. *International Journal of Entrepreneurship and Innovation Management*, *18*(2-3), 182-209.

Kanazawa, S. (2005) Is 'discrimination' necessary to explain the sex gap in earnings? *Journal of Economic Psychology, 26*(2), 269-287.

Krueger, N.F. (2017). Entrepreneurial intentions are dead: Long live entrepreneurial intentions. In: *Revisiting the entrepreneurial mind* (pp. 13-34). Springer, Cham.

Kushnirovich, N., Heilbrunn, S., & Davidovich, L. (2018). Diversity of entrepreneurial perceptions: Immigrants vs. native population. *European Management Review*, *15*(3), 341-355.

Marlow, S., & Patton, D. (2005). All credit to men? Entrepreneurship, finance, and gender. *Entrepreneurship theory and practice*, 29(6), 717-735.

Minniti, M., & Naudé, W. (2010). What do we know about the patterns and determinants of female entrepreneurship across countries? *The European Journal of Development Research, 22*, 277.

Mirjana, P.B., Ana, A., & Marjana, M.S. (2018). Examining determinants of entrepreneurial intentions in Slovenia: Applying the theory of planned behaviour and an innovative cognitive style. *Economic Research-Ekonomska Istrazivanja*, *31*(1), 1453-1471.

Nowiński, W., Haddoud, M.Y., Lančarič, D., Egerová, D., & Czeglédi, C. (2019). The impact of entrepreneurship education, entrepreneurial self-efficacy and gender on entrepreneurial intentions of university students in the Visegrad countries. *Studies in Higher Education, 44*(2), 361-379.

Nuttin, J., & Lens, W. (1985). *Future time perspective and motivation: theory and research method.* Hillsdale, NJ : Erlbaum.

Piperopoulos, P., & Dimov, D. (2015). Burst bubbles or build steam? Entrepreneurship education, entrepreneurial self-efficacy, and entrepreneurial intentions. *Journal of Small Business Management*, *53*(4), 970-985.

Rauch, A., & Hulsink, W. (2015). Putting entrepreneurship education where the intention to act lies: An investigation into the impact of entrepreneurship education on entrepreneurial behavior. *Academy of management learning & education*, *14*(2), 187-204.

Schlaegel, D., & Koenig, M. (2011). *Determinants of entrepreneurial intent: A meta-analytic test and integration of competing models*. G-Forum, Zuerich.

Seginer, R. (2008). Future orientation in times of threat and challenge: How resilient adolescents construct their future. *International Journal of Behavioral Development*, *32*(4), 272-282.

Seginer, R. (2009). *Future orientation: Developmental and ecological perspectives*. Springer Science & Business Media.

Seginer, R., Nurmi, J.E., & Poole, M. (1991). Adolescent future orientation in cross-cultural perspectives. In: *11th meeting of International Society for the Study of Behavioral Development. Minneapolis, MN*.

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Shepherd, D.A., & Krueger, N.F. (2002). An intentions–based model of entrepreneurial teams' social cognition. *Entrepreneurship Theory and Practice*, *27*(2), 167-185.

Simons, J., Vansteenkiste, M., Lens, W., & Lacante, M. (2004). Placing motivation and future time perspective theory in a temporal perspective. *Educational psychology review*, *16*(2), 121-139.

Souitaris, V., Zerbinati, S., & Al-Laham, A. (2007). Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and resources. *Journal of Business venturing*, *22*(4), 566-591.

Sullivan, D.M., Meek, W.R., (2012) Gender and entrepreneurship: A review and process model. *Journal of Managerial Psychology*, *27*(5), 428-458.

Townsend, D.M., Busenitz, L.W., & Arthurs, J.D. (2010). To start or not to start: Outcome and ability expectations in the decision to start a new venture. *Journal of business venturing*, *25*(2), 192-202.

Westhead, P., & Solesvik, M.Z. (2016). Entrepreneurship education and entrepreneurial intention: do female students benefit?. *International Small Business Journal*, *34*(8), 979-1003.

Citation Information: Bar-Lev, S., Beimel, D., & Rechavi, A. (2019). To be or not to be an entrepreneur? Entrepreneurial tendencies and future orientation among male and female information-systems students. *Journal of Entrepreneurship Education, 22*(5).