GENDER EFFECTS ON ENTREPRENEURIAL INTENTIONS: A TPB MULTI-GROUP ANALYSIS AT FACTOR AND INDICATOR LEVEL.

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ABSTRACT

We use the Theory of Planned Behavior (TPB) to detect gender effects in the variables that shape entrepreneurial intentions. We find that the effect of gender on intentions is mediated via personal attitudes toward entrepreneurship and more so via perceived control over becoming an entrepreneur. These mediation effects at factorial level can be explained by moderation effects at indicator level. Where male students are driven by the more dominant achievement-oriented entrepreneurial values, female students are more driven by the less dominant balance-oriented entrepreneurial values. Where male students are driven by both internal and external feelings of control, female students are driven by the more dominant internal feelings of control. This study adds to the research that studies entrepreneurial intentions and clarifies how different entrepreneurial definitions for men and women may drive entrepreneurial behavior.

Keywords: entrepreneurial intentions, gender effects, Theory of Planned Behavior, multi-group structural equation modeling.

INTRODUCTION

The study and practice of raising entrepreneurial intentions has been the subject of much debate in recent years. International studies such as the "Global Entrepreneurship Monitor 2007 (GEM)" and "The International Survey on Collegiate Entrepreneurship 2006 (ISCE)" clearly demonstrate nationwide differences in indicators of entrepreneurial activity and intent respectively. Given the socio-economic benefits generally attributed to entrepreneurship (Carree & Thurik, 2006), these differences have stimulated academic, educational and governmental institutions to study the factors influencing entrepreneurial intentions. We aim to contribute to this growing knowledge domain.

One striking feature of the studies mentioned earlier is the ratio of entrepreneurial activity comparing men versus women. Results from the GEM 2007 study indicate that over the previous decade women typically had a lower average score on the total entrepreneurial activity (TEA) index as compared to men and that even though this difference has decreased over the years a gender-gap still remains (Allen, Elam, Langowitz & Dean, 2007). These authors found that the gender-gap in TEA is the largest in high income countries, in which men are almost twice as likely to be early stage or established business owners (GEM, 2007). As an extreme example, Belgium (the target country of this study) has a ratio of four male to one female entrepreneur.

This study aims to contribute to an increased understanding of gender differences in entrepreneurial activity. Such a study of gender differences in entrepreneurship is a recent but not new endeavor. In her review of previous entrepreneurship literature, Ahl (2004) noted several shortcomings of previous studies on gender effects in entrepreneurship: the one-sided empirical focus on men, the use of male-gendered measuring instruments and the lack of theoretical grounding. To address the lack of theoretical underpinnings, De Bruin, Brush and Welter (2007: 323) suggest that: *"a separate theory on women's entrepreneurship may not be*

required. Rather, existing theoretical concepts should be expanded to incorporate explanations for the distinctiveness of women's entrepreneurship, and current theoretical approaches, which are normally used in trying to explain women's entrepreneurship, should be broadened." In this study we aim to address these shortcomings: we build on the Theory of Planned Behavior (Ajzen, 1991) to develop an instrument that explores gender differences in entrepreneurial intentions.

The Theory of Planned Behavior (TPB) is a framework that models the different variables that impact the intention to engage in a particular behavior: personal attitudes, social norms and perceived behavioral control. TPB has been successfully adopted to explain and predict a wide range of behavior (Armitage & Conner, 2001). In an entrepreneurial setting, TPB has been successfully used to explain entrepreneur's start-up intentions (Krueger et al., 2000) and outcomes (Kolvereid & Isaksen, 2006). Previous research indicated inconsistent results with respect to the importance of the factors subjective norms and perceived behavioral control. The objective of this study is to overcome both measurement and analytical shortcomings of previous TPB entrepreneurial studies with an explicit focus on exploring the gender effects that shape entrepreneurial intentions.

THEORETICAL FRAMEWORK

Grounded in social cognitive psychology literature, the Theory of Planned Behavior was originally developed to model the relationship between an individual's attitude towards a certain behavior and the actual behavior (Ajzen, 1991). Central to the TBP is that intentions serve as a mediator between attitudinal beliefs and the actual behavior. According to TPB, intention to start an entrepreneurial venture depends on personal desirability of entrepreneurship (*personal attitude*), the social acceptability of entrepreneurship to a

normative reference group (*subjective norms*) and the perceived feasibility and control of actually becoming an entrepreneur (*perceived behavioral control*) (Ajzen, 1991).

Krueger et al. (2000) applied TPB to entrepreneurial intentions and found a positive effect of personal attitude and perceived behavioral control on intentions, but not of subjective norms. Kolvereid and Isaksen (2006) confirmed the link of personal attitude and social norms with intentions, but not of perceived behavioral control. In addition, they found a significant effect of entrepreneurial intentions on behavior. We believe that part of these contradictory findings lie in differences with regards to measurement and research setting. These studies differ in whether or not general factors are seen as aggregates of more specific belief indicators (Kolvereid & Isaksen, 2006) or as separate constructs measured by a single or multi-item measure (Krueger et al., 2000). For instance, whereas Krueger et al. (2000) use a single overall item to measure perceived control and personal attitude, Kolvereid and Isaksen (2006) employ an aggregate of different belief indicators. In addition, these studies use different items targeted at business students (Krueger et al., 2000) or potential business owners (Kolvereid & Isaksen, 2006).

Ajzen (1991) designed both the structural and measurement part of the TPB-model. Ajzen (1991) differentiates between a factorial and an indicator level. More specifically, the factors of personal attitude, subjective norms and perceived behavioral control are a function of indicators measuring respectively behavioral, normative and control beliefs (see Figure 1). This approach specifies both general measures and specific indicators and in this regard combines the approaches of Krueger et al. (2000) and Kolvereid and Isakson (2006). We believe that differentiating between a factorial and indicator level may clarify the contradictory findings of previous research. Furthermore, we believe that these two levels of analysis may help to explain gender differences in entrepreneurial intentions. At the factorial level we develop hypotheses on whether the effect of gender is mediated via the TPB-factors

of personal attitude, subjective norms and perceived feasibility. At the indicator level, we develop hypotheses on whether gender moderates the effect of specific belief-indicators on the more general factors. In a first stage, we establish whether the effect of gender on entrepreneurial intentions can be explained by its constituting factors. In a second stage, we establish whether a gender effect at factorial level established in stage 1 can be explained by differences in indicators. In the next sections, we develop hypotheses for each of the central TPB-factors and their belief indicators.

Insert Figure 1 about here

Personal attitude: behavioral beliefs toward becoming an entrepreneur.

With regards to the choice whether or not to become an entrepreneur, personal desirability represents the *value* weighted by the *expectancy* of important entrepreneur-related career outcomes. For instance, an individual might value a high salary in a future profession and expect entrepreneurship to provide financial returns. Previous studies in the career preferences of entrepreneurs, suggest gender differences in these beliefs.

Cromie (1987) found that in their motives whether or not to become an entrepreneur, women are less concerned with making money and often choose entrepreneurship as a result of career dissatisfaction. They also see entrepreneurship as a means of simultaneously satisfying their own career needs and those of their children and family. Carter et al. (2003) indicated that male nascent entrepreneurs and non-entrepreneurs rated financial success and being innovative higher as career reasons for entrepreneurship. Clain (2002) suggested that women place a higher value on nonwage aspects of self-employment than men and Georgellis and Wall (2005) indicated that women are more responsive to entrepreneurship as a substitute for part-time work. Kirk and Belovics (2006) summarized that women become entrepreneurs in order to balance work and family, whereas men seek wealth creation or economic development.

Based on these results, we expect that males look upon entrepreneurship more often as a means to 'get ahead' in aspects such as wealth and personal development, whereas women desire entrepreneurship more strongly to 'get organized' in aspects such as combing work and personal life. We denote those values related to getting ahead as 'achievement indicators' while values related to getting organized are defined as 'balance indicators'. We assume that the achievement indicators will dominate the balance indicators to determine a higher score of males on personal attitudes and subsequently entrepreneurial intentions. Within the TPB framework, we specify the following hypothesis:

H1: The effect of gender on entrepreneurial intentions is mediated via personal attitude.

H1a: Achievement indicators (money, challenge) are typically more male-oriented whereas balance indicators (work-life balance, autonomy, stress and energy) are more female-oriented (moderation).

Subjective norms: normative beliefs toward becoming an entrepreneur.

When deciding whether or not to become an entrepreneur, subjective norms represent the *normative beliefs* towards entrepreneurship as a career choice weighted by *motivation to comply* with these normative beliefs. For instance, an individual might think his or her partner disapproves the decision to become an entrepreneur yet would not want to comply with this disapproval.

Previous research has led to disappointing results for the factor subjective norms and its indicators in an entrepreneurial setting (Krueger et al., 2000) and broader research (Armitage & Conner, 2001). The study of Kolvereid & Isakson (2006) found a significant yet weak impact of subjective norms on entrepreneurial intentions. Trafimow and Finlay (1996) argued

that this weak relationship may be attributed to a minority of individuals whose actions are primarily driven by perceived social pressure. Hebert et al. (1997) suggest that in certain contexts women may be more strongly driven by social pressures than their male counterparts. Hartman and Hartman (2008) found that strong role-models are more important in influencing the occupational intentions of women in a male-dominated profession such as engineering. In deciding whether or not to become an entrepreneur a female will value the opinion of the environment

The factor subjective norms is typically found to be a weak predictor in the TPB model (Armitage & Conner, 2001). Based on previous literature, we expect that women will be more inclined to comply with normative referents than their male counterparts. This will determine a higher score for females on the factor subjective norms and their entrepreneurial intentions. We assume that the normative opinion of significant others does not differ between men and women, but that women will be more motivated to comply with these referents. Within the TPB framework, we specify the following hypothesis:

H2: The effect of gender on entrepreneurial intentions is mediated via subjective norms.
H2a: Females will be more motivated to comply with normative referents than their male counterparts.

Perceived behavioral control: control beliefs toward becoming an entrepreneur.

When applying TPB to entrepreneurial career decisions, perceived behavioral control is a function of the *importance* weighted by the *power* of control beliefs towards starting up a company. Recently, Ajzen (2002) differentiated between internal and external beliefs as important predictors of perceived behavioral control. Internal feelings of control are related to personal capabilities, whereas external feelings of control are related to situational

characteristics. As an example of external control beliefs, an individual might perceive financial resources to be an important necessity to start up a company. If the individual, however, perceives low levels of external control with respect to raising sufficient funding, he or she might refrain from becoming an entrepreneur. Similarly, a lack of perceived internal control might result from the person believing that entrepreneurship requires certain capabilities (e.g. know-how) while he or she believes to lack these capabilities.

Previous research indicates important gender differences in feelings of behavioral control. Langowitz and Minnitti (2007) suggest that women's propensity to start new businesses is positively related to both their alertness to existing opportunities and self-assessment of having adequate skills and knowledge. Wilson et al. (2007) found a significant lower score for women on entrepreneurial intentions and on feelings of internal control. Their measure of internal control included: being able to solve problems, making decisions, managing money, being creative, getting people to agree with you and being a leader. Zhao et al. (2005) found a significant effect of gender on entrepreneurial intentions but this was, however, not mediated via feelings of control (identifying new business opportunities, creating new products, thinking creatively and commercializing an idea or new development). Finally, Kourilsky and Walstad (1998) indicated that whereas both male and female students exhibit a low level of entrepreneurship knowledge, female students were more aware of these deficiencies, lowering their internal feelings of control.

Based on these results, we expect that female aspiring entrepreneurs will place more value on internal feelings of control such as having sufficient know-how, abilities in opportunity recognition and being creative in their evaluation of the feasibility of becoming an entrepreneur. Previous research has typically not focused on external beliefs of control such as adequate financial means, a stimulating entrepreneurial climate and governmental support. We will explore gender difference in external feelings of control. We assume that internal

feelings of control will outweigh external feelings of control in their prediction of entrepreneurial intentions. We formulate the following hypotheses:

H3: The effect of gender on entrepreneurial intentions is mediated via perceived behavioral control.

H3a: Indicators of internal feelings of control (know-how, opportunity recognition and creativity) are more important predictors of the perceived behavioral control for women than for men.

METHOD

We conducted a survey on a sample of 437 graduate students at the two largest Belgian universities. Our choice for a population restricted to Belgian business students can be justified by the specific gender differences the Belgian setting offers with regards to entrepreneurship (GEM, 2007): a ratio of four male entrepreneurs to one female for both early stage entrepreneurial activity and established business owners. We chose for students with an interest in business that were on the verge of deciding on future employment in order to assure enough variation in the entrepreneurial intentions construct (Krueger et al., 2000).

Sample.

We collected data in the two largest universities in Belgium: K.U.Leuven and Ghent University. We contacted 520 business students in Ghent and 569 business students in Leuven. These students were asked to complete a survey instrument via internet or on paper. An incentive was provided to stimulate response. In total 437 respondents completed the survey of which 423 were suitable for analysis, resulting in a final response rate of 39%. Our

data set was evenly composed of men (47%) and woman (53%) and the two cities Ghent (51%) and Leuven (49%). Furthermore 23% of respondents completed the survey via paper and 77% via internet. Respondents had an average age of 22 years with a small standard deviation of 1.74. 48.5% followed a basic economical education and 51.5% followed an advanced economical education. The students with a more advanced economical training differed from their control group by being at least one year older and by having additional educational experience (for instance in engineering). We found no significant effects of university (F (423.1) = 0.851, p = 0.357) or survey administration (F (424.1) = 0.101, p = 0.751) on entrepreneurial intentions. We found a correlation between type of education and entrepreneurial intent (r = 0.135, p = 0.005) and between type of education and gender (r = -0.101, p = 0.035). We include the type of education as a control variable in subsequent analyses. We found a significant difference (F (423,1) = 7.454, p = 0.007) for entrepreneurial intentions between men (M = 3.76) and women (M = 3.51).

Comment [hl1]: Is de verdeling HIR/GAS enerzijds & TEW anderzijds. Meer dan welkom om hier een betere verwoording voor te vinden.

Survey.

The final survey instrument can be found in appendix, (back-) translated from Dutch. All items were measured on a five-point Likert scale ranging from “completely disagree” to “completely agree”.

At the factor level, we measured the central TPB constructs with a multi-item measure based on the work of previous authors: Van Gelderen et al. (2008) for intentions, Krueger et. al. (2000) for personal attitude, Kolvereid and Isakson (2006) for subjective norms and Kraft et al. (2005) for perceived behavioral control. To validate our hypotheses for the factor subjective norms, we specified a general factor measuring motivation to comply (Cronbach’s alpha = 0.86) together with a general factor measuring the normative opinion of close

referents (Cronbach's alpha = 0.87). In accordance with TPB, the overall subjective norms factor is the multiplicative function of these two general factors.

At the indicator level, Ajzen (2006: 4) stressed that **"***Investigators often mistakenly assume that direct measures of the theory's constructs are obtained by asking a few arbitrarily selected questions, or by adapting items used in previous studies"*. As such, rather than simply copying previous instruments, this study developed new measures. A team of 12 students devised a list of 16 items they considered to be important for the decision of becoming an entrepreneur. In a second stage, three academic researchers cross-validated these items and categorized them as 7 career reasons (personal attitude) and 7 control beliefs (perceived behavioral control), thereby omitting 2 of the original items. In a third stage, pretesting with 30 respondents eliminated remaining inconsistencies resulting in 5-6 items per category. The behavioral beliefs included both achievement (challenge, money) and balance (work-life balance, stress and autonomy) oriented indicators. The control beliefs included both external (financial means, governmental support and entrepreneurial climate) and internal (know-how, opportunity recognition and creativity) feelings of control. The highest correlation between the indicators of personal attitudes and perceived behavioral control was 0.50 suggesting that multi-collinearity will not confound our results if we use these items as separate predictors. For the factor subjective norms we asked respondents to validate the opinion of close others such as parents, friends and the partner. These items correlated had an average correlation of 0.70 suggesting that each of these indicators could not be separated form one another. As specified above, we specified a general factor of normative opinions to include these different items.

Analysis.

For our analyses we opted for structural equation modeling. More specifically, we relied on the techniques of group code analysis at the general level of analysis to investigate mediation effects of gender while using multi-group comparison at the indicator level to investigate moderation effects of gender (Verheul, Thurik & Grilo, 2008).

Structural equation modeling is generally conducted in two steps. In a first step one checks the adequacy of the measurement model. In a second step one checks the adequacy of the structural model. In this section we will discuss the first step where we confirm our measurement model and specify the fit indices to evaluate both the measurement and structural model. In the result sections we will evaluate the structural model with the analysis specified at the beginning of this section.

A confirmatory factor analysis was conducted on the items that measure the factors of entrepreneurial intentions, personal attitude, motivation to comply, normative opinion and perceived behavioral control. Our analysis revealed an adequate measurement model with high factor loadings for all the items on the expected factors and communalities of each item exceeding 0.50. We discuss three fit indices that are generally considered as important (Hu & Bentler, 1998). First, the SRMR-value (standardized root mean square residual) represents the overall difference between observed and predicted correlations. A value of 0.03 which is situated well below the cut-off value of 0.08, suggests that the hypothesized model resembles the actual correlations. Secondly, the RMSEA (root mean square error of approximation) equals 0.04 with a 90% confidence interval between 0.03 and 0.05. The RMSEA provides similar information as the SRMR but adjusted for model complexity (degrees of freedom). The value and confidence interval are situated below the cut-off value of 0.06 which suggests a good fit. Finally, Bentler's CFI (comparative fit index) equals 0.97 which is above the cut-off of 0.95.

The fulfillment of these fit indices does not automatically imply that the measurement model is invariant across different groups i.e. male and female respondents. We tested our model on configural, weak and strong measurement invariance (Wu, Li & Zumbo, 2007). In the case of configural and weak invariance, we test whether the same factor structure holds across groups and whether the factor loadings across groups are equal. In the case of strong measurement invariance, not only the factor loadings are held equal but the intercepts as well.

We conducted two separate confirmatory factor analyses, one on the male group and one on the female group. Adequate model fit indices were found for male (SRMR= 0.05, RMSEA = 0.05, Bentler's CFI = 0.95) and female (SRMR= 0.04, RMSEA = 0.04, Bentler's CFI = 0.96) students. To assure that there is no gender confounding in the measurement, we constrained the factor loadings and intercepts in both models to be equal. This constrained model provided a good fit (SRMR= 0.06, RMSEA = 0.06, Bentler's CFI = 0.96) and showed no significant difference in loadings or intercepts. This implies that the measurements were perceived as similar by men and women.

RESULTS

Our results are presented in two subsequent analyses: at the factorial level we investigate the general hypotheses whether the effect of gender on entrepreneurial intentions is mediated via the TPB-factors. At the indicator level we investigate the more specific hypotheses of how gender moderates the effects of beliefs indicators on the TPB factors. We discuss each of the factors specified by the TPB-model: personal attitudes, subjective norms and perceived behavioral control.

Factorial level.

The correlation matrix is depicted in Table 1. In this table we also include the means, standard deviations and Cronbach's Alpha coefficients for all measures involved. Most of the subsequent analyses confirm the relations depicted in this table. At the factorial level, we conducted a group code analysis where a dummy variable distinguishes between the two groups. The model where personal attitude and perceived behavioral control mediate the effect of gender on entrepreneurial intentions best fits the data (Hu & Bentler, 1998): SRMSR = 0.02, RMSEA = 0.00 and CFI = 0.99. No modification indices were found for a direct effect of gender on entrepreneurial intentions. This suggests that the effect of gender on entrepreneurial intentions was in fact fully mediated via the TPB-factors of personal attitude and perceived behavioral control. This confirms hypotheses 1 and 3.

The adequacy of these fit indices does not imply that all path coefficients are significant (see Figure 2). We did not find an effect of subjective norms on intentions nor did we find one for gender on subjective norms. We fail to confirm hypothesis 2. However we discovered significant effects for its constituting components: normative opinion and motivation to comply. We find a significant gender difference in the factor motivation to comply (t (415) = -2.03, p = 0.04), confirming hypothesis 2a. We also note that the normative opinion of close referents is significantly related to entrepreneurial intentions and even more to personal attitude (see Table 1).

Finally, we also note that our control variable *type of education* is significantly related to the TPB-variables. The highest correlation is with perceived behavioral control. This suggests that the more advanced the economical training the more students will perceive entrepreneurship as a feasible option. We include this relationship in figure 2.

Insert Table 1 about here

Insert Figure 2 about here

Indicator level.

For the personal attitude and perceived behavioral control factors we modeled the relationship with its specific indicators and analyzed how gender moderates these effects. Table 2 summarizes our results: the standardized beta-parameter for each indicator on the related factor and amount of explained variance in that factor. The next columns reflect the different standardized beta-parameters for the male and female group and the significance of any gender moderation effect for that indicator.

Insert Table 2 about here

Personal attitudes. In deciding whether entrepreneurship is desirable, students attributed importance to several behavioral beliefs: money, challenge, autonomy, stress and work-life balance. Where the achievement valuations are more important predictors for men (money and challenge), the balance valuations (work-life balance, autonomy and stress) are more important for women, confirming hypothesis 1a. In addition, we confirm the assumption that the achievement indicators are more important predictors than the balance indicators. In total these items predicted up to 16% of the variance in personal desirability.

Perceived behavioral control. When deciding whether entrepreneurship is feasible, students attributed importance to several external control beliefs (financial means, governmental aid and entrepreneurial climate) and internal control beliefs (know-how, opportunity and creativity). Controllability over internal feelings of control, such as know-how, opportunity recognition and creativity are important predictors for women, whereas for men both internal (creativity) and external (financial means) feelings of control are important predictors. We confirm hypothesis 3a. In addition, the internal control beliefs were more important predictors for perceived behavioral control than the external control beliefs. In total these items predicted 35 % of the variance in perceived behavioral control.

DISCUSSION

International studies indicate important gender differences in entrepreneurial intentions and activity. The GEM 2007 indicated that women's level of optimism and self-confidence with respect to starting a business is lower than that of their male counterparts. This study made use of the Theory of Planned Behavior (TPB) in order to clarify these gender differences. We find that gender differences in entrepreneurial intentions can be explained by the factors perceived behavioral control (feasibility) and personal attitude (desirability), but not by subjective norms (social pressure).

Personal attitude.

We investigated whether men versus women are different in their career reasons to become an entrepreneur. Previous research suggests that women prefer entrepreneurship for its ability to 'get organized' whereas men prefer entrepreneurship for its ability to 'get ahead'. We confirmed this in our research and found that achievement indicators dominate the balance indicators in the prediction of personal attitude. These results suggest that men and women have different career reasons for becoming an entrepreneur and that these differences should be accounted for in any efforts to understand entrepreneurial intentions.

Subjective norms.

We investigated gender effects in the subjective norms to become an entrepreneur. Previous research offered little empirical evidence there is more social pressure for men to become entrepreneurs than women. Indeed, we found no significant gender differences in the normative opinion of others to become an entrepreneur. Both men and women are equally stimulated by the environment to become an entrepreneur. This normative opinion was related

to entrepreneurial intentions but our data suggest that this effect goes via personal attitude, rather than a direct effect on intentions. We did however find significant gender differences in the motivation to comply with normative referents. Female students are more willing to comply with normative referents. These results suggest that normative referents have a more important role in stimulating female entrepreneurship than male entrepreneurship.

Perceived behavioral control.

We investigated gender differences in both internal and external feelings of control. Internal feelings of control are related to personal capabilities, whereas external feelings of control are related to situational characteristics. Previous research suggests that women vest more importance to internal feelings of control that external feelings of control. This was confirmed by our research. Furthermore, we discovered that internal feelings of control dominate external feelings of control in their prediction of entrepreneurial intentions. An interesting finding is that creativity proved to be an exceptionally important predictor for men. These results suggest that internal feelings of control are more important to understand entrepreneurial intentions than external feelings of control which is especially the case for females.

Conclusion.

In sum, these results suggest important gender differences in the factors that shape entrepreneurial intentions. There seem to be important distinctions in the defining features of entrepreneurship of men versus women. Men seem to prefer entrepreneurship as a means of getting ahead and see financial restraints and creativity as important practical considerations in their decision to become an entrepreneur. Women seem to prefer entrepreneurship as a means of getting organized and see personal capabilities and know-how as important practical

consideration in their decision to become an entrepreneur. Furthermore, women are more inclined to comply with social pressures than their male counterparts. These results have important implications for research and practice.

The defining features of entrepreneurship may differ for men and women. Our results suggest that different variables may be important to understand what motivates or drives performance of male versus female entrepreneurs. As women value entrepreneurship more as a means of getting organized, outcomes such as work-family interference, personal health and perceived autonomy are more important indicators to evaluate their performance. This broadens the definition of entrepreneurial success to include the non-financial gains of being an entrepreneur. In turn, this raises important issues for the practice of stimulating entrepreneurial intentions. Men and women are to be treated as different target groups in raising entrepreneurial intentions. Stimulating female entrepreneurship may require offering different career reasons and training different competencies than those typically associated with male-dominated entrepreneurship. When both male and female career reasons and competencies are stimulated, the defining features of entrepreneurship may evolve over time to include both male and female aspects.

Limitations and future research.

There are several limitations to our study. A first major hurdle is the fact that we did not measure actual entrepreneurial behavior as a validation of our measure of entrepreneurial intentions. Our measure of entrepreneurial intentions may be seen as a generalized aspiration to become an entrepreneur, rather than a specific intention to start an enterprise. In this way it may differ only little from our measure of personal attitude, which shows high correlation with our intention measure. We have several reasons to believe that this is not the case and did not jeopardize the validity of our results. First, we asked respondents in what time frame

they aimed to start an enterprise (modus = 10 years) and showed that this was higher correlated with intentions (r = .31) than with personal attitude (r = 0.24). Furthermore, confirmatory factor analysis confirmed personal attitude and intentions as two separate factors. Finally, perceived behavioral control contributed to the prediction of these behavioral intentions over and above personal attitude.

Nevertheless we are aware that common method bias may have inflated the strength of our relations. Both intentions and the other TPB-factors are measured as a self-rating in a cross-sectional research design. Future research is advised to measure the basic TPB-factors, intentions and actual behavior at different time periods, to have a better view on the true relationship between these factors. Although this may shed more light on the relative importance of the various TPB-factors, we do not believe it will influence the role of these factors as a mediator between gender and entrepreneurial intentions.

We do believe that other indicators may be added two the ones included in our study. Future research should add more indicators that allow distinguishing between different behavioral beliefs (achievement versus balance) and control beliefs (internal versus external). A multi-item measurement may be more suitable to detect reliable differences than the piecemeal fashion in which effects were indicated in this study.

Finally, our indicators were developed based on a setting of Belgian business students. It would be most interesting to see if these relationships hold in more diverse settings. An obvious avenue for further research is conducting a cross-national research design. Will these relationships hold in countries that show equal entrepreneurial propensity for men and women (e.g. China). A less demanding avenue in terms of data collection would be an investigation of the relationships in a setting of students from a different ethnic origin or lower educational background.

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TABLE 1

Mean, standard deviations and correlations for the constructs central to our model

	Mean	SD	1.	2.	3.	4.	5.	6.
1. Intention	3.63	0.96	**0.87**					
2. Personal attitude	3.35	0.79	0.79[b]	**0.84**				
3. Normative opinion	3.12	0.75	0.46[b]	0.51[b]	**0.86**			
4. Motivation to comply	3.71	0.68	-0.03	-0.04	0.04	**0.80**		
5. Perceived behavioral control	3.63	0.73	0.62[b]	0.58[b]	-0.43[b]	-0.07	**0.86**	
6. Gender (1 =female)	0.53	0.50	-0.13[a]	-0.10[a]	0.01	0.10[a]	-0.20[b]	
7. Type of education (1 = advanced)	0.51	0.50	0.14[b]	0.04	0.02	.04	0.19[b]	-0.10[a]

[a] Significant at 0.05

[b] Significant at 0.01

Cronbach alpha in bold on the diagonal

TABLE 2

Effect of belief indicators on the TPB-factors and moderation effects via intentions

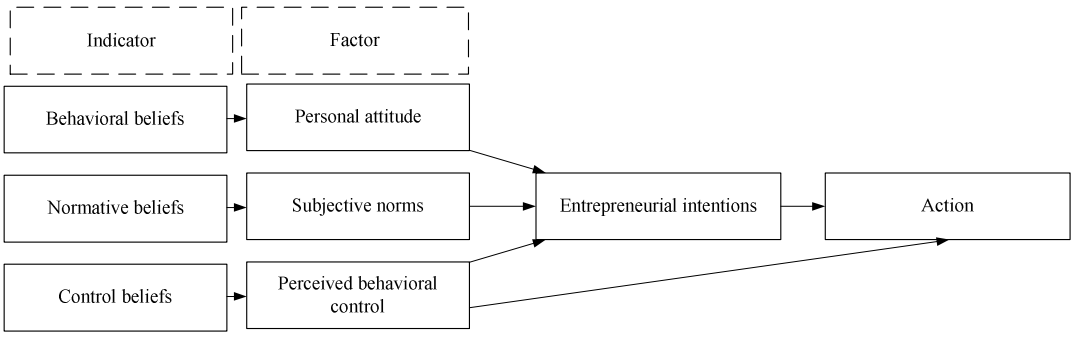
	Full model		Gender difference for full model			
	Stand β	R^2	Stand β value ♂	Stand β value ♀	F-value	Sign.
Dependent variable: Personal desirability						
money	0.19[b]		0.20 [b]	0.17[a]	7.77	0.00
challenge	0.23[b]		0.27 [b]	0.08	5.09	0.00
autonomy	0.16[b]		0.14	0.15[a]	3.92	0.02
stress	-0.13[a]		-0.14	-0.16[a]	4.12	0.02
work-life	0.11[a]	0.15[b]	0.11	0.16[a]	3.11	0.04
Dependent variable: Perceived feasibility						
climate	-0.01		0.02	-0.07	0.94	0.39
government	0.10[a]		0.04	0.13[a]	2.56	0.08
finance	0.14[a]		0.22[b]	0.05	5.04	0.00
know-how	0.19[b]		0.12	0.24[b]	8.44	0.00
opportunity	0.18[b]		0.13	0.23[b]	6.60	0.00
creativity	0.33[b]	0.35[b]	0.43[b]	0.23[b]	24.78	0.00

[a] Significant at 0.05

[b] Significant at 0.001

FIGURE 1

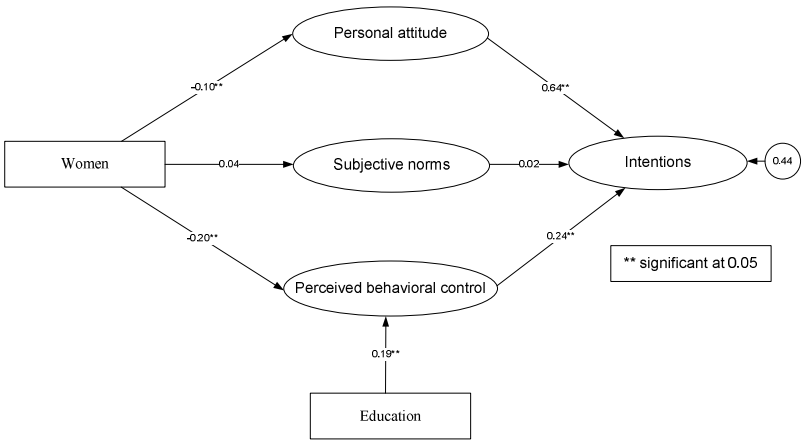
The Theory of Planned Behavior



Source : Azjen, 1991, Krueger et al., 2000

FIGURE 2

Final model results of group code analysis (factor level)



APPENDIX: SURVEY ITEMS

Respondents were asked to rate a Likert scale for each of the following statements:

1 entirely disagree-2 rather disagree-3 neither agree/disagree- 4 rather agree-5 entirely agree

ENTREPRENEURIAL INTENTIONS	**1**	**2**	**3**	**4**	**5**
I have considered becoming an entrepreneur one day.					
I never see myself becoming an entrepreneur. ®					
I have never given the start-up of an enterprise much thought. ®					
When the opportunity arises, I will become an entrepreneur.					
PERSONAL DESIRABILITY	**1**	**2**	**3**	**4**	**5**
It seems attractive to become an entrepreneur.					
Being an entrepreneur evokes mainly negative thoughts. ®					
Entrepreneurship would present more up than downsides.					
I dream of being an entrepreneur one day.					

EXPECTANCY	**1**	**2**	**3**	**4**	**5**
Entrepreneurs experience a lot of autonomy.					
Entrepreneurship is accompanied by a lot of stress.					
As entrepreneur you make a good living.					
Entrepreneurship is a profession full of challenges.					
As entrepreneur you can better balance work and private life.					
VALUE	**1**	**2**	**3**	**4**	**5**
I value autonomy in my future profession.					
I would abhor stressful situation at work ®.					
I think it is important to earn enough money.					
I would like to meet a lot of new challenges in my profession.					
I consider the balance between work and private life as important.					

PERCEIVED FEASABILITY	**1**	**2**	**3**	**4**	**5**
I have every confidence that I can become an entrepreneur.					
I believe I can overcome most obstacles in becoming an entrepreneur.					
I believe to possess sufficient capacities to become an entrepreneur.					
Becoming an entrepreneur seems a feasible option.					

BELIEF STRENGTH	**1**	**2**	**3**	**4**	**5**
An entrepreneur requires having applied knowledge (knowhow).					
Entrepreneurship requires good external business opportunities.					
Becoming an entrepreneur requires creativity in business ideas.					
Starting-up a company requires a lot of financial means.					
There is not enough governmental support for entrepreneurship.					
A favorable entrepreneur-climate is important to start a business.					

BELIEF POWER	**1**	**2**	**3**	**4**	**5**
I think I have the knowledge (knowhow) to become entrepreneur.					
I see myself as able to detect good business opportunities.					
I am creative enough to devise new business ideas.					
Lack of financial means does not stop me becoming entrepreneur.					
Governmental support doesn't affect my entrepreneurial decision.					
An unsupportive climate will not hinder my entrepreneurship.					

MOTIVATION TO COMPLY	1	2	3	4	5
I would vest importance in the opinion of others before becoming entrepreneur.					
I would listen to the advice of others when deciding whether to be an entrepreneur.					
My environment has an important impact on my decision to become an entrepreneur.					
Becoming an entrepreneur is entirely my own decision. ®					

PERSONAL REFERENTS	1	2	3	4	5
My parents are positively oriented towards a career as entrepreneur.					
My friends see entrepreneurship as a logical choice.					
Becoming entrepreneur would not benefit the relationship with my partner. ®					