



SEINÄJOEN AMMATTIKORKEAKOULU
SEINÄJOKI UNIVERSITY OF APPLIED SCIENCES

**This is an electronic reprint of the
original article (final draft).**

Please cite the original article:

Joensuu-Salo, S. 2020. A long-term effect of entrepreneurship education on entrepreneurial intentions: Results from Finnish higher education students. *Journal of Finnish Studies*, 23 (2), 9 - 31.



This is an author version of the article, published in the Journal of Finnish Studies Vol. 23, No. 2,
December 2020

A Long-Term Effect of Entrepreneurship Education on Entrepreneurial Intentions: Results from Finnish Higher Education Students

Sanna Joensuu-Salo
Seinäjoki University of Applied Sciences

Abstract

The economic growth of Finland and the well-being of Finnish society are heavily based on entrepreneurship. Hence, it is important to foster entrepreneurial intentions among students in higher education. Entrepreneurial intentions have been extensively studied in entrepreneurship research for the past twenty years, and most research applies Ajzen's (1991) Theory of Planned Behavior (TPB) in the context of entrepreneurial intentions. However, there remains a demand for research: studies employing the full TPB model are rare, and the biggest research gap lies in longitudinal settings. This article contributes to entrepreneurial intention research by examining the TPB model in a longitudinal follow-up of the same individuals from a point during their university studies, to between one and four years after graduation. In addition, the impact of entrepreneurial education on entrepreneurial intentions requires more research and longitudinal settings. My article contributes to this research by examining the long-term effect of entrepreneurial education on entrepreneurial intentions as illustrated by Finnish students in higher education. The objectives of this study are as follows: 1) to examine the long-term effect of attitudes, perceived behavioral control, and the subjective norm on entrepreneurial intentions, and 2) to examine the long-term effect of entrepreneurial education on entrepreneurial intentions after graduation. The data for this research were gathered from Finnish students in higher education over the period from 2008 to 2013. The results suggest that attitudes to an entrepreneurial career have explanatory power that is retained with time. Attitudes measured during the period of higher education explained entrepreneurial intentions even two to four years after graduation. Interestingly, the results show that entrepreneurial education has a long-term effect on entrepreneurial intentions among Finnish students in higher education.

Keywords: Entrepreneurial intentions, higher education, entrepreneurial education, Finnish students

Introduction

In Finland, entrepreneurship is one of the cornerstones of society. Official Statistics of Finland (2016) reports 357,000 enterprises operating in Finland. The vast majority of those enterprises (98 percent) are small and employ fewer than ten people. Unsurprisingly in Finland, small and medium-sized enterprises (SMEs) create the majority of new jobs, which in the period 2001–2016 meant new jobs for 119 000 people. Economic growth and the well-being of society are evidently heavily based on entrepreneurship. Therefore, it is important to encourage entrepreneurship within Finnish society.

Every year, the Global Entrepreneurship Monitor (GEM) research stream collects the views of experts on national circumstances and changes in entrepreneurship. Compared to other EU countries, Finland continues to be a competitive and business-friendly economy, despite the weak global economic situation (Suomalainen et al. 2016). National experts evaluate entrepreneurship policy and regulation, primary and secondary education, cultural and social standards, the physical, financial, and legal infrastructure, and market transparency and its dynamism available to support entrepreneurship at least at the same level as the EU average. However, technology transfer, finance, and higher education are not counted among the sectors clearly supporting entrepreneurship. The GEM results suggest that it is important to develop entrepreneurship education within higher education. This challenge has been acknowledged by *Arene* (the council of rectors in Finnish Universities of Applied Sciences), which instructed Applied Universities on how to deliver entrepreneurship education (Arene 2015). *Arene* suggests that entrepreneurship should be embedded in the strategy of universities. In addition, the Ministry of Education and Culture in Finland published guidelines for entrepreneurship education addressing all educational levels (Opetus- ja kulttuuriministeriö 2017). The guidelines are intended to identify, develop, and guide measures to promote entrepreneurship and entrepreneurship education at various levels of education. The guidelines work as a tool for evaluating and developing activities for school management, staff, and other entrepreneurship educators, and provide tips and planning support for practical work. It is especially important to track students with a high level of entrepreneurial intention and support their path to becoming entrepreneurs.

Entrepreneurial intentions have been studied extensively in entrepreneurship research for the past twenty years (Kolvereid 1996; Krueger and Carsrud 1993; Fayolle and Liñán 2013; Kautonen, van Gelderen, and Fink 2015). In this study, entrepreneurial intentions refer to the commitment to starting a new business (Krueger and Carsrud 1993) after a student graduates. In general, the previous research has been largely based on Ajzen's (1991) Theory of Planned Behavior (TPB), and has addressed entrepreneurial intention in different contexts. At the core of the TPB is the idea that intentions have three conceptually independent determinants: attitude toward the behavior, the subjective norm, and perceived behavioral control (Ajzen 1991). Maalaoui et al. (2018) propose three major types of entrepreneurial intention research: (1) studies exploring the antecedents of intention; (2) explanations of how an entrepreneurial intention can be put into action; and (3) research seeking to extend the TPB by adding dimensions to the original formula. In recent years, studies of implementation intention in the context of entrepreneurial intention and behavior have been published (e.g., Schjoedt 2018). Other new research agendas in the context of entrepreneurial intention include a culture's mode of influence (Liñán and Jaén 2018) and collective intentions (Brännback, Carsrud, and Krueger 2018). Nevertheless, further research is still required. Schlaegel and Koenig (2014) showed by way of a meta-analysis that studies employing the full TPB model are rare, and only in recent years have published studies examined the intention-behavior link using large samples (Kautonen, van Gelderen, and Fink 2015). Clearly, the biggest research gap has been in longitudinal settings (e.g., Matlay and Carey 2007; Liñán and Fayolle 2015). This article contributes to entrepreneurial intention research by examining the TPB model in a longitudinal monitoring of individuals from the period when they were in full-time education, to between one and four years after they graduated. Accordingly, this

study provides unique information about entrepreneurial intention and the TPB model in a longitudinal setting involving Finnish students in higher education.

Prior research demonstrates that entrepreneurial education can have a positive effect on entrepreneurial intentions, entrepreneurial attitudes, and self-efficacy (e.g., Zhao, Seibert, and Hills 2005; Jones et al. 2008; Wilson et al. 2009; Bae et al. 2014), but results are not consistent with other studies finding evidence of a negative impact (e.g., Oosterbeek, van Praag, and Ijsselstein 2010). Culture, gender, self-efficacy, initial level of intentions, or motivation may have a role in the impact of entrepreneurial education on entrepreneurial intentions (Packham et al. 2010; Drost and McGuire 2011; Hytti et al. 2010; Fayolle and Gailly 2013). The impact of entrepreneurial education requires more research and longitudinal settings.

The objectives of this study are to examine the following: (1) the delayed effects of entrepreneurship education on entrepreneurial intentions, and (2) the explanatory power of the TPB in a longitudinal setting. In particular, I examine how taking entrepreneurship courses affects the entrepreneurial intentions of students in higher education after graduation and how attitudes, subjective norms, and perceived behavioral control, as measured during the period of study, explain the variance in entrepreneurial intentions measured after graduation. My study contributes to this research by examining the long-term effect of entrepreneurial education on entrepreneurial intentions in the context of Finnish higher education students. In addition to contributing to the entrepreneurial intention research, the paper offers guidance to policy makers.

Theoretical Framework and Propositions

Entrepreneurial Intention

Prior research offers several definitions of entrepreneurial intention. Those definitions include that of Krueger, Reilly, and Carsrud (2000, 420) defining intention as “the target behaviors of starting a business.” In addition, Crant (1996, 43) defines entrepreneurial intentions as “one’s judgements about the likelihood of owning one’s own business.” Other definitional aspects include the view of entrepreneurship as a process (Gartner, Shaver, Gatewood, and Katz 1994; Liñán and Chen 2009) and entrepreneurial intentions as the first step in that process (Lee and Wong 2004). Research suggests that entrepreneurial intention predicts entrepreneurial behavior (Biraglia and Kadile 2017) which indicates that the subject will have strong levels of attention to detail, experience with business ideas or concepts, and be capable of action (Bird 1989; Wurthmann 2014). Lortie and Castogiovanni (2015) summarize intention as the state of mind that drives an individual to begin a business, and they suggest that intention an antecedent of entrepreneurial behavior.

Theory of Planned Behavior (TPB)

A majority of the intention studies are based on the TPB by Ajzen (1991). The history of the TPB model lies in the psychology of intention (Ajzen and Fishbein 1969), and the TPB suggests that intention is influenced by attitudes, social norms, and perceived behavior control, and that intention is an antecedent of behavior (action) (Ajzen 1991, 188). Accordingly, the stronger the intention to engage in specific behavior, the more likely its actual performance should be. The TPB model has been widely used in entrepreneurship research and tested in different contexts (Armitage and Conner 2001; Sheeran 2002; Krueger and Carsrud 1993; Krueger, Reilly, and Carsrud 2000; Barbosa, Fayolle, and Lassas-Clerc 2006). Maalaoui et al. (2018) conclude that applying the TPB in the field of entrepreneurship is logical. The various antecedents of intention are discussed below.

Attitude to the behavior refers to the degree to which a person makes a favorable or unfavorable evaluation or appraisal of the behavior in question. The more positive individuals’ perceptions of the

outcome of starting a business (see, e.g., Krueger, Reilly, and Carsrud 2000; Segal, Borgia, and Schoenfeld 2005; van Gelderen and Jansen 2006; Pruett et al. 2009), the more favorable their attitude toward that behavior should be, and consequently the stronger their intention to go ahead and start a business should be. The *subjective norm* refers to the perceived social pressure to perform or not to perform a behavior, which in this context is starting a business. Subjective norms are based on beliefs of whether important referent individuals or groups approve or disapprove of an individual establishing a business, and to what extent that approval or disapproval matters to the individual (Ajzen 1991, 1995). *Perceived behavioral control* refers to the perceived ease or difficulty of performing the behavior. It is based on beliefs regarding the presence or absence of the requisite resources and opportunities for performing a given behavior (see Bandura et al. 1980; Swan, Chang-Schneider, and McClarity 2007). According to Ajzen (1991), this is most compatible with Bandura et al.'s (1980) concept of perceived self-efficacy. In entrepreneurial intention literature, perceived behavioral control and entrepreneurial self-efficacy have been used almost interchangeably (Schlaegel and Koenig 2014).

In most studies, the best predictor of intentions has been perceived behavioral control (Kristiansen and Indarti 2004; Liñán 2004; Segal, Borgia, and Schoenfeld 2005; Wilson, Kickul, and Marlino 2007; Prodan and Drnovsek 2010; Chen and He 2011; Drost and McGuire 2011; Paco et al. 2011; Lee et al. 2011). The second-most common predictor has been attitudes (Zampetakis et al. 2009; Moi, Adeline, and Dyana 2011), and that is followed by the subjective norm (Aizzat, Hazlina, and Chew 2009; Lope Pihie and Hassan 2009; Engle et al. 2010; Siu and Lo 2013). Kautonen, van Gelderen, and Fink (2015) found that attitude, the subjective norm, and perceived behavioral control jointly explain 59 percent of the variation in intention. In Schlaegel and Koenig's (2014) meta-analysis, it was noted that behavioral control had a significantly larger effect than either attitude or subjective norms.

However, there are no studies that test the TPB model in a longitudinal setting where attitudes, the subjective norms, and perceived behavioral control explain intentions in the long-term. These variables are normally measured cross-sectionally. The current research tests the durability of these antecedents, and the following question is presented:

Question 1: Do attitudes, perceived behavioral control, and the subjective norm measured during higher education studies explain entrepreneurial intentions over time?

Entrepreneurship Education

There has been a debate over whether entrepreneurship can be taught. According to previous research, entrepreneurial skills or certain facets of entrepreneurship can be learned in the context of entrepreneurial behavior, or at least "fostered, facilitated and nurtured" (Bird 1995; Mayhew et al. 2012; Kuratko 2005). Jones and Iredale (2010) distinguish between enterprise education with a focus on personal attributes and skills that can be used in a variety of contexts on the one hand and entrepreneurship education with a focus on starting and running a business on the other. The effects of entrepreneurship education have been studied by, for example, Matlay and Carey (2007), Mwasalwiba (2010), Støren (2014), and Zhang, Duysters, and Cloudt (2014), but the results in this research stream have been inconsistent and ambiguous. Some of these studies show entrepreneurship education exerting positive effects on entrepreneurial self-esteem and propensities (e.g., Zhao, Seibert, and Hills 2005; Jones et al. 2008; Wilson et al. 2009; Zhang, Duysters, and Cloudt 2014), while others report a negative impact (e.g., Oosterbeek, van Praag, and Ijsselstein 2010). Støren (2014) found that the reported learning outcome of entrepreneurship education was not large, but if of a certain type and scope, entrepreneurship education contributes to an increase in "generic" entrepreneurial skills. Bae et al. (2014) meta-analyzed studies examining the relationship between

entrepreneurship education and entrepreneurial intentions and found a significant but a small correlation between entrepreneurship education and entrepreneurial intentions. This result was consistent with the findings by Martin, McNally, and Kay (2013), who also found a small but positive relationship between entrepreneurship education and entrepreneurial intentions.

The TPB can also be used in evaluating the outcomes of entrepreneurship education. Fayolle, Gailly, and Lassas-Clerc (2006) developed a common framework to evaluate entrepreneurship education programs with the TPB model. While testing the framework they found that the entrepreneurship education programs assessed had a strong measurable impact on the entrepreneurial intentions of the students. However, the issue of the impact of entrepreneurship education is still very complex (Henry, Hill, and Leitch 2004), because the impact of entrepreneurship education programs might only become apparent after some time (Fayolle, Gailly, and Lassas-Clerc 2006). In addition, Block and Stumpf (1992) illustrate that it is important to measure the delayed effects of entrepreneurship education.

Hence, in this research the following question is presented:

Question 2: Does entrepreneurship education have delayed effects on entrepreneurial intentions?

Control Variables

Gender and work situation are included in the theoretical model as control variables. These control variables were selected because of previous meta-analytical studies (e.g., Haus et al. 2013) and the results from Global Entrepreneurship Monitor (Suomalainen et al. 2016).

Gender

The effect of gender has attracted considerable attention in previous entrepreneurial studies (Fayolle and Liñán 2013). Previous research shows that women have lower entrepreneurial intentions and less desire to start new businesses than men do (e.g., Wilson, Marlino, and Kickul 2004; Liñán and Chen 2009), although not all studies have found a correlation between gender and entrepreneurial intentions (Pruett et al. 2009; Yordanova and Tarrazon 2010). Joensuu et al. (2013) found a gender effect also in the development of entrepreneurial intentions, which were more positive among men than among women. In addition, the male students in Joensuu et al.'s sample recorded higher initial levels of entrepreneurial intention than the female students did. As both existing enterprise statistics and research on entrepreneurial propensity have shown gender differences in entrepreneurial actions (e.g., Crant 1996; Kourislkya and Walstad 1998; Liñán and Chen 2009; cf. Pruet et al. 2009; Yordanova and Tarrazon 2010; Lee et al. 2011; Zhang, Duysters, and Cloudt 2014), gender is included in the theoretical model as a control variable.

Work Situation

Deciding to become an entrepreneur involves choosing that path from among other career alternatives. Douglas and Shepherd (2000) argue that the decision to become an entrepreneur may be modeled as a utility-maximizing career choice, and they point out that people choose to be self-employed if the total utility they expect to derive (via income, independence, risk bearing, work effort, and perquisites associated with self-employment) is greater than the expected utility from their best employment option. Eisenhauer (1995) built an economic model of the decision to be an entrepreneur based on the expected utility gained, but also dependent on utility derived from the working conditions of the employment versus self-employment alternatives. Individuals have to make choices as to which conditions suit them best. Thus, it can be inferred that the individual's present work situation can affect entrepreneurial intentions, and work situation is therefore included as a control variable in the model.

Figure 1 presents the theoretical model of the study.

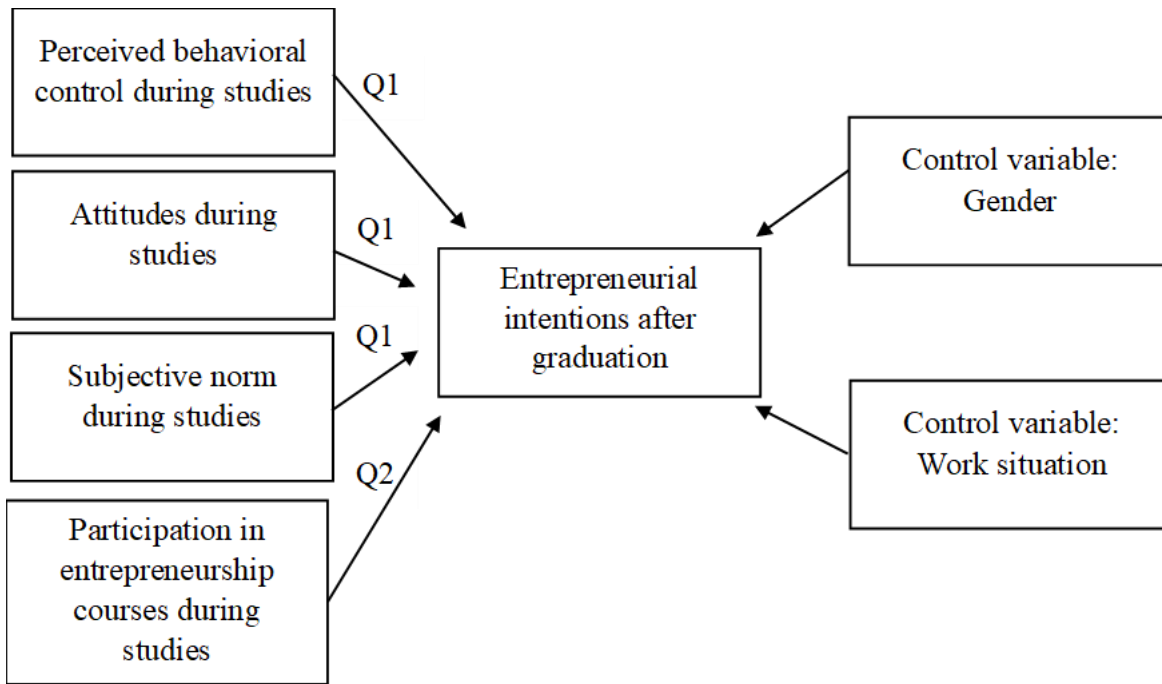


Figure 1. Theoretical model of the study.

Methodology

Data Collection

The measurement instrument was based on Ajzen's (1991) TPB model and on the work of Kolvereid (1996) and Tkachev and Kolvereid (1999). The first data collection, Time 1, was undertaken during the period 2008–12. The questionnaire was sent every year to all the students studying in Seinäjoki University of Applied Sciences during those years. Entrepreneurial intentions, attitudes toward entrepreneurial career, perceived behavioral control, subjective norm, and participation in entrepreneurship courses were measured during the years (2008–12).

The second data collection, Time 2, took the form of a follow-up after graduation in 2013. It gathered information on entrepreneurial intentions and the situation in the participants' working lives. The follow-up questionnaire was sent to students who had graduated between 2009 and 2012. This means that at the time of the data collection, some of the students had graduated one year previously (at a minimum) and some four years previously (at a maximum). The questionnaire was sent to 2,280 graduates and included an option to respond by internet or by mail. In addition, those graduates who did not respond by internet or by mail were approached and interviewed by telephone when possible. A total of 1,045 responses were received. In the next stage, data from Time 1 and Time 2 were merged to identify two measurement waves for each student in the form of values for the same student from the study time and after graduation. The combined data produced a latest measurement result from the study time for 282 graduates. For other respondents, no measurement data was found from study time. For 100 graduates the measurement results derived from the fourth study year just before graduation, for 106 from the third study year, for nine graduates from the second study year, and for 67 from the first study year. Of these 282 respondents in the final data, 180 had graduated one year before the follow-up measurement, and 102 had graduated two to four years before the follow-up

measurement. The number of graduates the previous year was 180 and during the preceding two to four years, that number was 102. There are more women (73 percent) in the data sample than men (27 percent) and the majority of the respondents (78 percent) were employed. Three percent were entrepreneurs, seven percent were unemployed, five percent were studying, and the rest were on parental leave or fulfilling military service obligations. In addition, five percent were working as an entrepreneur part-time. The respondents represented a variety of fields of study (social services, health, and sports 40 percent; social sciences, business, and administration 23 percent; technology, communications, and transport 17 percent; culture 14 percent; natural sources and the environment 6 percent). Fifty-one percent of the respondents had participated in entrepreneurship courses during their studies.

There can be a problem with data loss in longitudinal settings. Time 1 measurement consists of data from different years (2008–12), which makes it difficult to compare Time 1 data and Time 2 data. To illustrate some comparison, in year the 2012 data (Time 1) there were 1,522 answers of which 56 percent were from women. Most of the respondents studied in the field of social services, health, and sports (24 percent), in the field of technology (23 percent), and in the field of social sciences, business, and administration (22 percent). Thirteen percent studied in the field of culture, 13 percent in the field of natural sources and the environment and 6 percent in the field of tourism, catering, and domestic services. If this is compared to the whole student population in Seinäjoki University of Applied Sciences, the representativeness of the data is good. However, there exists a data loss from Time 1 to Time 2. Time 2 data have more women in the respondents (73 percent) and more respondents representing the study field of social services, health, and sports when compared to whole student population.

Variables

Entrepreneurial intentions (EI, measured during studies and in the follow-up study). Averaging six items created an index of entrepreneurial intention. The reliability of the scale was good (Cronbach's alpha 0.89, min 1, max 7, mean 3.3, sd 1.4).

Subjective Norm (SN, measured during studies). Originally the support from people close to the individual (belief items) was measured with three items (a 7-point scale) and motivation to comply was measured by three items (on a 7-point scale) referring to each of the aforementioned belief questions (three items). To support the statistical analysis, the motivation to comply items were transformed to suit a -3 – +3 scale. The belief-based items (coded as ranging from 1 to 7) and the corresponding motivation to comply items (coded as ranging from -3 to +3) were multiplied, and then added to create a subjective norm index (ranging from -63 to +63). This coding is based on that of Ajzen (1991), who suggests that the strength of each normative belief is multiplied by the person's motivation to comply with the referent in question, and the SN is directly proportional to the sum of the resulting products across the salient referents. Cronbach's alpha for the belief scale was 0.85 and for the motivation scale 0.83. The descriptive statistics for the whole scale relating to SN were as follows: minimum -45.0, maximum 56.0, mean -1.1, sd 16.3.

Perceived Behavioral Control (PBC, measured during studies). An index of PBC was created by averaging the five item scores. The reliability of the scale was acceptable (Cronbach's alpha 0.74, minimum 1, max 7, mean 4.0, sd 1.0).

Attitudes toward entrepreneurship (ATT; measured during studies). An index of entrepreneurial attitude was created by averaging nine item scores. The reliability of the scale was acceptable (Cronbach's alpha 0.76, minimum 2.4, max 7, mean 5.0, sd 0.8).

Gender was operationalized as zero for female and one for men. For the analysis, the work situation was operationalized as a dichotomy, zero for *not employed in some firm or organization* and one for *employed in some firm or organization*. Entrepreneurs were coded as zero. This was owing to a need to control for the effect of being employed (not as an entrepreneur). Participation in entrepreneurship courses during studies was operationalized as zero for no entrepreneurship courses taken, and one if the respondent had taken entrepreneurship courses.

All variables and items are presented in detail in Appendix 1. Table 1 presents the correlation table of the variables.

	EI	PBC	ATT	SN	Gender	Work situation
PBC	.408**	1				
ATT	.415**	.408**	1			
SN	.155**	.042	.154**	1		
Gender	.173**	.093	.029	-.027	1	
Work situation	.041	.045	.079	.000	.107	1
Entrepreneurship courses	.144*	.068	.117	.105	-.181**	-.028

*, **, *** indicate significance at the 90 %, 95 %, and 99 % level respectively.

Table 1. Correlation table of the variables.

The data were analyzed using the IBM SPSS Statistics 24 program. Multiple linear regression analysis was used to test the model, where PBC, attitudes, and SN measured during studies and participation in entrepreneurship courses during studies explain the entrepreneurial intentions after graduation.

The normality of the scales was tested using the Kolmogorov-Smirnov and Shapiro-Wilk tests, which showed that all the variables in our model were normally distributed. Variance inflation factor values were checked for multicollinearity. Homoscedasticity and the normality of residuals were examined. Common method bias was also tested because the biases can cause potential problems when data for both the predictor and criterion variable are obtained from the same person in the same measurement context, using the same item context and similar item characteristics (Podsakoff et al. 2003). It is recommended that researchers, in addition to following good measurement practice, implement additional procedural and statistical means to control for method biases. One way of doing so is to use Harman's single factor test. In the test, all of the studied variables are loaded into an exploratory factor analysis and the unrotated factor solution examined. The basic assumption is that if a substantial amount of common method variance is present, either a single factor will emerge, or one general factor will account for the majority of the covariance among the measures. Harman's single factor test was used to control for method biases in the current study. The thirty items used to create the main variables were factor analyzed using principal axis factoring where the unrotated factor solution was examined, as recommended by Podsakoff et al. (2003). Kaiser's criterion for the retention of factors was followed. The Kaiser-Myer-Olkin measure for sampling adequacy (KMO) showed that the sample size was suitable for the factor analysis (0.85). Factor analysis results indicated the existence of several factors with eigenvalues greater than 1.0. The first factor accounted for 23 percent of the variance. Since several factors were identified and since the first factor did not

account for the majority of the variance, a substantial amount of common method variance does not appear to be present.

Results

For the analysis, the data were divided in two samples. The first sample (Group A) represents respondents who had graduated one year previously (n=180) and the second sample (Group B) represents respondents who had graduated 2–4 years previously. For each individual, there is a measurement from Time 1 (study time) and Time 2 (after graduation). The demographics of the respondents were compared between Group A and Group B to examine possible differences. There were more men in Group A (31 percent) than in Group B (19 percent). In addition, more individuals were employed in some firm or organization in Group A (87 percent) than in Group B (70 percent). However, there were no differences between these groups in taking entrepreneurship courses or in respondents' study fields.

The regression model was tested separately for Group A and Group B. Table 2 presents the findings. Group A presents results for the group that had graduated one year previously and Group B for the group that had graduated 2–4 years previously. Model 1 includes only the variables of the TPB, while Model 2 introduces entrepreneurship courses and the control variables of gender and work situation.

	Group A Model 1	Group A Model 2	Group B Model 1	Group B Model 2
Constant	-.720 (.594)	-.325 (.640)	-.449 (.865)	-.498 (.836)
PBC	.494*** (.105) β .345	.416 *** (.107) β .296	.242 (.131) β .177	.208 (.121) β .158
ATT	.429*** (.130) β .246	.380 ** (.130) β .227	.532** (.171) β .299	.478** (.164) β .280
SN	.008 (.006) β .088	.009 (.006) β .106	.011 (.007) β .142	.007 (.007) β .097
Gender (male)		.264 (.211) β .088		.593* (.281) β .194
Entrepreneurship courses (yes)		-.004 (.191) β -.002		.725*** (.219) β .303
Work situation		.036 (.279)		-.158 (.232)

		β .009		β -.061
R-squared	.279	.233	.177	.283
Adjusted R-squared	.267	.205	.151	.236
F statistics	22.352***	8.246***	6.889***	5.987***

Standard errors are reported in parentheses.

*, **, *** indicate significance at the 90 %, 95 %, and 99 % level respectively.

Table 2. Regression results (standard deviations from the mean and β).

For Group A (those who graduated one year previously), Model 1 (the basic TPB model) explains 27 percent of the variance in entrepreneurial intentions after graduation. The most important variables in the model are PBC ($\beta=.35^{***}$) and attitudes ($\beta=.25^{**}$). The role of the subjective norm was insignificant. In Model 2, which added participation in entrepreneurial courses and the control variables, no added variables were significant, and the whole model explains 21 percent of the variance in entrepreneurial intention, which is less than in Model 1.

Interestingly, the model acts quite differently with Group B who graduated 2–4 years previously. In this case, Model 1 explains only 15 percent of the variance in entrepreneurial intentions after graduation. The only significant variable in the model is attitudes ($\beta=.30^{**}$). PBC and SN are both insignificant. Model 2 again adds participation in entrepreneurship courses and control variables to the model, and it explains 24 percent of the variance in entrepreneurial intentions, with the most significant variable in the model being participation in entrepreneurship courses during studies ($\beta=.30^{***}$), followed by attitudes ($\beta=.28^{**}$) and gender ($\beta=.19^*$). Other variables are insignificant.

However, it is possible that students who participate in entrepreneurship courses may already have higher entrepreneurial intentions. This can be the main reason to take the entrepreneurship courses during the studies. To examine this phenomenon, the difference between mean values of entrepreneurial intentions measured during studies and after graduation was tested between those who participated in entrepreneurship courses and those who did not. Interestingly, these groups do not differ in entrepreneurial intentions measured during studies (mean values 3.5 vs. 3.4). After graduation the mean value of entrepreneurial intention is significantly higher (value 3.5) with graduates who participated in entrepreneurship courses than with other graduates (value 3.1). It seems that those individuals who participated in entrepreneurship courses have retained their intention level. With those individuals who did not participate in entrepreneurship courses, entrepreneurial intentions have decreased. Based on this result, it could be argued that participating in entrepreneurship courses has a preservative effect on entrepreneurial intentions (see Table 3).

	EI during studies (mean, sd)	EI after graduation (mean, sd)
Group 1: participated in entrepreneurship courses	3.5 (1.1)	3.5 (1.4)
Group 2: no participation in entrepreneurship courses	3.4 (1.3)	3.1 (1.3)
Sig.	-	**

** indicates significance at the 95 % level.

Table 3. Entrepreneurial intentions during studies and after graduation.

The results suggest that some antecedents of intention in the TPB model have explanatory power over time. Hence, Question 1 can be answered affirmatively. Perceived behavioral control and attitudes measured during study time significantly explained the variance in entrepreneurial intentions a year after graduation. The whole TPB model explained 27 percent of the variance in intentions. However, the explanatory power of the TPB model was smaller with the group that graduated 2–4 years previously, and the model explains only 15 percent of the variance in entrepreneurial intentions. The significance of PBC disappears and only attitudes measured during the period of study explain the variance in entrepreneurial intentions. The subjective norm, however, did not explain intentions in any models. It could be argued that attitudes have considerable explanatory power, even over time. Attitudes to an entrepreneurial career measured during studies still explain entrepreneurial intentions even 2–4 years after graduation.

It is interesting to see that entrepreneurial education has a long-term effect on entrepreneurial intention and, therefore, Question 2 can be answered affirmatively. Taking entrepreneurship courses did not explain entrepreneurial intentions among respondents who had graduated one year previously. For the group that had been working for longer (specifically for 2–4 years), having taken entrepreneurship courses at a university was the most significant variable in the model. However, further analysis showed that the effect is above all preservative. Entrepreneurial intentions decreased with individuals who did not participate in entrepreneurship courses during studies but not with individuals who did.

Discussion

The objectives of this article were to examine potential delayed effects of entrepreneurship education on entrepreneurial intentions, and the explanatory power of TPB in a longitudinal setting. The current research shows that entrepreneurship education does indeed have delayed effects. When examining these effects on entrepreneurial intentions in the period of one year subsequent to graduation, no relationship was found. However, significant effects were found between two and four years after graduation. Participation in entrepreneurship courses at a university was the most significant factor explaining the entrepreneurial intentions of our sample in the long term. The effect is above all preservative. It may be that the value of entrepreneurial skills and the knowledge of entrepreneurship acquired at a university is retained better if individuals have more work experience. It is interesting that if a person has experienced entrepreneurship education as a full-time student, the idea of becoming an entrepreneur remains interesting after exposure to working life. This was not found with those who did not take entrepreneurship courses. The results support the argument of Fayolle, Gailly, and Lassas-Clerc (2006) that the impact of entrepreneurship education might only become apparent after some delay, and therefore it is important to measure its delayed effects (Block and Stumpf 1992), rather than assessing the effect of entrepreneurship education as soon as courses are completed.

This study also showed that the phenomena of entrepreneurship are somewhat gendered. After experiencing working life for between two and four years, men had acquired stronger entrepreneurial intentions than women. It is interesting that this gender effect was not apparent with the group that graduated one year previously but was apparent with the group that graduated 2–4 years previously. However, it should be noted that in this group there were more women in the sample than in the group that had graduated one year previously. Despite this sample limitation, it seems that men are clearly more tempted by an entrepreneurial career than women are. It is also notable that the current situation in working life did not have an effect on entrepreneurial intentions (whether actually employed or in the outside working life category outlined above).

This study also examined how the antecedents of intentions explain entrepreneurial intentions in the long term. In particular, the study tested how attitudes, the subjective norm, and PBC measured

among higher education students explain the variance in entrepreneurial intentions measured after graduation. It is interesting that with the group that graduated one year previously, the subjects' attitudes and PBC were still significant antecedents of entrepreneurial intentions. However, with the group that graduated 2–4 years previously, only attitudes had retained any significant meaning. It can be argued that PBC (how a person believes he or she would succeed as an entrepreneur) develops over time and by accruing work experience. That is why PBC measured while studying at university no longer explains entrepreneurial intentions after between two and four years of work experience, while attitude does. This suggests that attitude regarding an entrepreneurial career is an important antecedent that endures over time. Attitudes serve multiple functions, such as directing people toward positive outcomes, but they can also express important aspects of a person's self-concept and identity (Katz 1960; Smith, Bruner, and White 1956). Attitudes do not change quickly, which is why the effect on intentions can be found after the passage of time. It is also interesting to note that some attitudes are more self-defining than others (Zunick, Teeny, and Fazio 2017), and some are more strongly determined by our environment and unique experiences while others are more strongly determined by our genes (Brandt and Wetherell 2012). While there are no studies investigating whether attitudes toward entrepreneurship are inherited, some attitudes can be changed (Glaser et al. 2015). It would appear to be important to have entrepreneurship education providers both instill entrepreneurial skills in their students but also foster positive attitudes toward entrepreneurship among educators, management, and the students.

If nations seek to encourage their higher education graduates to pursue a career in entrepreneurship, they might learn from the Finnish experience indicating that universities should foster entrepreneurship through strategy and embed entrepreneurship in all study fields. Entrepreneurship education builds entrepreneurial competence because it focuses on developing specific skills and values that are useful to nascent entrepreneurs in identifying business opportunities and pursuing them (Alvarez and Busenitz 2001). Entrepreneurship education can also help entrepreneurs to identify, pursue, exploit, and safeguard business operations and to establish a successful enterprise (Wiklund, Patzelt, and Shepherd 2009). Finland can serve as an example because the success of start-ups is particularly important there, given the fact that the majority of the new jobs in the country are created by small and medium-sized enterprises.

Limitations and Future Research

As with all research, this study has some limitations. First, the data were gathered only from one university of applied sciences. The characteristics of the context can affect the results. Second, 40 percent of the respondents had graduated from the field of social services, health, and sports, and there were more female respondents in the sample data. In Finland, entrepreneurship is not a particularly popular career choice for students studying social and health care. This sets restrictions on the generalizability of the results. Third, the study measures entrepreneurial intentions and the antecedents of intentions among students every year, but inevitably in this dataset, the measurement point for the year's group of respondents varies. Some respondents have the Time 1 measurement from the last study year and some from former years. All of this can affect the results.

Despite the above limitations, this study offers new insights into the effects of entrepreneurship education and the importance of attitudes in relation to entrepreneurship. In the future, more longitudinal settings would be required to replicate these results. In addition, it would be interesting to follow these same respondents after ten years of work experience and then reassess how entrepreneurial intentions develop over time.

References

- Aizzat, Mohd Nasurdin, Ahmad Noor Hazlina, and Ee Lin Chew. 2009. "Examining a Model of Entrepreneurial Intention among Malaysians Using SEM Procedure." *European Journal of Scientific Research* 33 (2): 365–73.
- Ajzen, Icek. 1991. "The Theory of Planned Behaviour." *Organizational Behavior and Human Decision Processes* 50 (2): 179–211.
- Ajzen, Icek, and Martin Fishbein. 1969. "The Prediction of Behavioural Intentions in a Choice Situation." *Journal of Experimental Social Psychology* 5 (4): 400–416.
- Alvarez, Sharon A., and Lowell W. Busenitz. 2001. "The Entrepreneurship of Resource-Based Theory." *Journal of Management* 27 (6): 755–75.
- Arene. 2015. "Arenen yrittäjyysuositukset 2015" [Arene's recommendations for entrepreneurship]. <http://www.arene.fi/sites/default/files/PDF/2015/Arenen%20YS%2012032015.pdf>.
- Armitage, Christopher, J., and Mark Conner. 2001. "Efficacy of the Theory of Planned Behaviour: A Meta-Analytic Review." *British Journal of Social Psychology* 40, 471–99.
- Bae, Tae Jun, Shanshan Qian, Chao Miao, and James O. Fiet, J. 2014. "The Relationship between Entrepreneurship Education and Entrepreneurial Intentions: A Meta-Analytic Review." *Entrepreneurship Theory & Practice* 38 (2): 217–54.
- Bandura, Albert, Nancy E. Adams, Arthur B. Hardy, and Gary N. Howells. 1980. "Test of the Generality of Self-Efficacy Theory." *Cognitive Therapy and Research* 4: 39–66.
- Barbosa, Saulo D., Alain Fayolle, and Narjisse Lassas-Clerc. 2006. "Assessing Risk Perception, Self-Efficacy, and Entrepreneurial Attitudes and Intentions: Implications for Entrepreneurship Education." *Post-Print halshs-00132815*, HAL.
- Biraglia, Alessandro, and Vita Kadile. 2017. "The Role of Entrepreneurial Passion and Creativity in Developing Entrepreneurial Intentions: Insights from American Homebrewers." *Journal of Small Business Management* 55 (1): 170–88.
- Bird, Barbara. 1989. "Implementing Entrepreneurial Ideas: The Case for Intentions." *Academy of Management Review* 13 (3): 442–53.
- . 1995. "Toward a Theory of Entrepreneurial Competency." In "Advances in Entrepreneurship, Firm Emergence and Growth, vol. 2, edited by Jerome Katz, and Robert H. Brockhaus, 51–72. Greenwich: JAI Press.
- Block, Zenas, and Stephen Stumpf. 1992. "Entrepreneurship Education Research: Experience and Challenge." In *The State of the Art of Entrepreneurship*, edited by Donald L. Sexton and John D. Kasarda, 17–45. Boston, MA: PWS-Kent Publishing.
- Brandt, Mark J., and Geoffrey A. Wetherell. 2012. "What Attitudes are Moral Attitudes? The Case of Attitude Heritability." *Social Psychological and Personality Science* 3 (2): 172–79.

- Brännback, Malin, Alan Carsrud, and Norris Krueger. 2018. "Theory of Trying and 'We-Intentions': From Individual to Collective Intentions in Entrepreneurship and Family Business." In *A Research Agenda for Entrepreneurial Cognition and Intention*, edited by Malin Brännback and Alan Carsrud, 84–104. Cheltenham: Edward Elgar.
- Chen, Yun, and Yuanqiong He. 2011. "The Impact of Strong Ties on Entrepreneurial Intention: An Empirical Study Based on the Mediating Role of Self-Efficacy." *Journal of Chinese Entrepreneurship* 3 (2): 147–58.
- Crant, Michael J. 1996. "The Proactive Personality Scale as a Predictor of Entrepreneurial Intentions." *Journal of Small Business Management* 34 (3): 42–49.
- Douglas, Evan J., and Dean A. Shepherd. 2000. "Entrepreneurship as a Utility Maximizing Response." *Journal of Business Venturing* 15 (3): 231–52.
- Drost, Ellen, and Stephen McGuire. 2011. "Fostering Entrepreneurship among Finnish Business Students: Antecedents of Entrepreneurial Intent and Implications for Entrepreneurship Education." *International Review of Entrepreneurship* 9 (2): 83–112.
- Eisenhauer, Joseph, G. 1995. "The Entrepreneurial Decision: Economic Theory and Empirical Evidence." *Entrepreneurship Theory and Practice* 19 (4): 67–79.
- Engle, Robert L., Nikolay Dimitriadi, Jose V. Gavidia, Christopher Schlaegel, Servane Delanoe, Irene Alvarado, Xiaohong He, Samuel Buame, and Birgitta Wolff. 2010. "Entrepreneurial Intent: A Twelve-Country Evaluation of Ajzen's Model of Planned Behaviour." *International Journal of Entrepreneurial Research* 16 (1): 35–57.
- Fayolle, Alain, and Benoit Gailly. 2013. "The Impact of Entrepreneurship Education on Entrepreneurial Attitudes and Intention: Hysteresis and Persistence." *Journal of Small Business Management* [early view, first published online 16.9.2013]. doi: 10.1111/jsbm.12065.
- Fayolle, Alain, Benoit Gailly, and Narjisse Lassas-Clerc. 2006. "Assessing the Impact of Entrepreneurship Education Programmes: A New Methodology." *Journal of European Industrial Training* 30 (9): 701–20.
- Fayolle, Alain, and Francisco Liñán. 2013. "Entrepreneurial Intentions: Literature Review and New Research Perspectives." Conference paper presented at The 3rd GIKA Annual Conference, Valencia, Spain, July 7–9.
- Gartner, William B., Kelly G. Shaver, Elizabeth Gatewood, and Jerome A. Katz. 1994. "Finding the Entrepreneur in Entrepreneurship." *Entrepreneurship Theory and Practice* 18 (3): 5–10.
- Glaser, Tina, Nina Dickel, Benjamin Liersh, Jonas Rees, Philipp Süssenbach, and Gerd Bohner. 2015. "Lateral Attitude Change." *Personality and Social Psychology Review* 19 (3): 257–76.
- Haus, Inga, Holger Steinmetz, Rodrigo Isidor, and Rüdiger Kabst. 2013. "Gender Effects on Entrepreneurial Intention: A Meta-Analytical Structural Equation Model." *International Journal of Gender and Entrepreneurship* 5 (2): 130–56.

- Henry, Colette, Frances M. Hill, and Claire M. Leitch. 2004. "The Effectiveness of Training for New Business Creation." *International Small Business Journal* 22 (3): 249–71.
- Hytti, Ulla, Pekka Stenholm, Jarna Heinonen, and Jaana Seikkula-Leino. 2010. "Perceived Learning Outcomes in Entrepreneurship Education: The Impact of Student Motivation and Team Behavior." *Education + Training* 52 (8): 587–606.
- Joensuu, Sanna, Anmari Viljamaa, Elina Varamäki, and Erno Tornikoski. 2013. "Development of Entrepreneurial Intention in Higher Education and the Effect of Gender: A Latent Growth Curve Analysis." *Education + Training* 55 (8/9): 781–803.
- Jones, Brian, and Norma Iredale. 2010. "Enterprise Education as Pedagogy." *Education + Training* 52 (1): 7–9.
- Jones, Paul, Amanda Jones, Gary Packham, and Christopher Miller. 2008. "Student Attitudes toward Enterprise Education in Poland: A Positive Impact." *Education + Training* 50 (7): 597–614.
- Katz, Daniel. 1960. "The Functional Approach to the Study of Attitudes." *Public Opinion Quarterly* 24 (2): 163–204.
- Kautonen, Teemu, Marco Van Gelderen, and Matthias Fink. 2015. "Robustness of the Theory of Planned Behavior in Predicting Entrepreneurial Intentions and Actions." *Entrepreneurship Theory and Practice* 39 (3): 655–74.
- Kolvereid, Lars. 1996. "Prediction of Employment Status Choice Intentions." *Entrepreneurship Theory and Practice* 21 (1): 47–57.
- Kourilsky, Marilyn L., and William B. Walstad. 1998. "Entrepreneurship and Female Youth: Knowledge, Attitudes, Gender Difference, and Educational Practices." *Journal of Business Venturing* 13 (1): 77–88.
- Kristiansen, Stein, and Nurul Indarti. 2004. "Entrepreneurial Intention among Indonesian and Norwegian Students." *Journal of Enterprising Culture* 12 (1): 55–78.
- Krueger, Norris F., and Alan L. Carsrud. 1993. "Entrepreneurial Intentions: Applying the Theory of Planned Behaviour." *Entrepreneurship and Regional Development* 5 (4): 315–30.
- Krueger, Norris F., Michael D. Reilly, and Alan L. Carsrud, A. 2000. "Competing Models of Entrepreneurial Intentions." *Journal of Business Venturing* 15 (2): 411–32.
- Kuratko, Donald F. 2005. "The Emergence of Entrepreneurship Education: Development, Trends, and Challenges." *Entrepreneurship Theory and Practice* 29 (5): 577–98.
- Lee, Lena, Poh K. Wong, Maw D. Foo, and Aegean Leung. 2011. "Entrepreneurial Intentions: The Influence of Organizational and Individual Factors." *Journal of Business Venturing* 6 (1): 124–36.
- Lee, Soo H., and Poh K. Wong. 2004. "An Exploratory Study of Technopreneurial Intentions: A Career Anchor Perspective." *Journal of Business Venturing* 19 (1): 7–28.

- Liñán, Francisco. 2004. "Intention-Based Models of Entrepreneurship Education." Conference paper presented at the Internationalising Entrepreneurship Education and Training Conference (IntEnt2004), Naples, Italy, July 5–7.
- Liñán, Francisco, and Yi-Wen Chen. 2009. "Development and Cross-Cultural Application of A Specific Instrument to Measure Entrepreneurial Intentions." *Entrepreneurship Theory and Practice* 33 (3): 593–617.
- Liñán, Francisco, and Alain Fayolle. 2015. "A Systematic Review on Entrepreneurial Intentions: Citation, Thematic Analysis, and Research Agenda." *International Entrepreneurship and Management Journal* 11 (4): 907–33.
- Liñán, Francisco, and Inmaculada Jaén. 2018. "A Proposed Model for the Culture's Mode of Influence on the Entrepreneurial Process." In *A Research Agenda for Entrepreneurial Cognition and Intention*, edited by Malin Brännback and Alan Carsrud, 62–83. Cheltenham: Edward Elgar.
- Lope Pihie, Zaidatol A., and Hisyamuddin Hassan. 2009. "Choice of Self-Employment Intention among Secondary School Students." *The Journal of International Social Research* 9 (2): 539–49.
- Lortie, Jason, and Gary Castogiovanni. 2015. "The Theory of Planned Behavior in Entrepreneurship Research: What We Know and Future Directions." *International Entrepreneurship and Management Journal* 11 (4): 935–57.
- Maalaoui, Adnane, Charles Perez, Gaël Bertrand, Myriam Razgallah, and Rony Germon. 2018. "'Cruel Intention' or 'Entrepreneurial Intention': Shat Did you Expect? An Overview of Research on Entrepreneurial Intention: An Interactive Perspective." In *A Research Agenda for Entrepreneurial Cognition and Intention*, edited by Malin Brännback and Alan Carsrud, 7–46. Cheltenham: Edward Elgar.
- Martin, Bruce C., Jeffrey J. McNally, and Michael J. Kay. 2013. "Examining the Formation of Human Capital in Entrepreneurship: A Meta-Analysis of Entrepreneurship Education Outcomes." *Journal of Business Venturing* 28 (2): 211–24.
- Matlay, Harry, and Charlotte Carey. 2007. "Entrepreneurship Education in the UK: A Longitudinal Perspective." *Journal of Small Business and Enterprise Development* 14 (2): 252–63.
- Mayhew, Matthew J., Jeffrey S. Simonoff, William J. Baumol, Batia M. Wiesenfeld, and Michael W. Klein. 2012. "Exploring Innovative Entrepreneurship and Its Ties to Higher Education Experiences." *Research in Higher Education* 53 (8): 831–59.
- Moi, Tung, Yin L. Adeline, and Mui L. Dyana. 2011. "Young Adult Responses to Entrepreneurial Intent." www.researcherswolrd.com 2 (3): paper 5.
- Mwasalwiba, Ernest S. 2010. "Entrepreneurship Education: A Review of Its Objectives, Teaching Methods, and Impact Indicators." *Education + Training* 52 (1): 20–47.

- Official Statistics of Finland. 2016. "Regional Statistics on Entrepreneurial Activity." [E-publication]. Helsinki: Statistics Finland [referred: 17.5.2018].
http://www.stat.fi/til/alyr/2016/alyr_2016_2017-12-21_tie_001_en.html
- Oosterbeek, Hessel, Mirjam van Praag, and Auke Ijsselstein. 2010. "The Impact of Entrepreneurship Education on Entrepreneurship Skills and Motivation." *European Economic Review* 54 (3): 442–54.
- Opetus- ja kulttuuriministeriö. 2017. "Koulutuksen yrittäjyyslinjaukset 2017" [Entrepreneurship Education Guidelines for Educational Institutes 2017]. <http://minedu.fi/yrittajyyslinjaukset>.
- Packham, Gary, Paul Jones, Christopher Miller, David Pickernell, and Brychan Thomas. 2010. "Attitudes toward Entrepreneurship Education: A Comparative Analysis." *Education + Training* 52 (8/9): 568–86.
- Paco, Arminda, Joao Ferreira, Mário Raposo, Ricardo Rodrigues, and Anabela Dinis. 2011. "Behaviours and Entrepreneurial Intention: Empirical Findings about Secondary Students." *Journal of International Entrepreneurship* 9 (1): 20–38.
- Podsakoff, Philip M., Scott B. MacKenzie, Joeng-Yeon Lee, and Nathan P. Podsakoff. 2003. "Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies." *Journal of Applied Psychology* 88 (5): 879–903.
- Prodan, Igor, and Mateja Drnovsek. 2010. "Conceptualizing Academic-Entrepreneurial Intentions: An Empirical Test." *Technovation* 30 (5/6): 332–47.
- Pruett, Mark, Rachel Shinnar, Bryan Toney, Francisco Llopis, and Jerry Fox. 2009. "Explaining Entrepreneurial Intentions of University Students: A Cross-Cultural Study." *International Journal of Entrepreneurial Behaviour and Research* 15 (6): 571–94.
- Schjoedt, Leon. 2018. "Implementation Intentions: The When, Where, and How of Entrepreneurial Intentions' Influence on Behavior." In *A Research Agenda for Entrepreneurial Cognition and Intention*, edited by Malin Brännback and Alan Carsrud, 105–21. Cheltenham: Edward Elgar.
- Schlaegel, Christopher, and Michael Koenig. 2014. "Determinants of Entrepreneurial Intent: A Meta-Analytic Test and Integration of Competing Models." *Entrepreneurship Theory and Practice* 38 (2): 291–332.
- Segal, Gerry, Dan Borgia, and Jerry Schoenfeld. 2005. "The Motivation to Become an Entrepreneur." *International Journal of Entrepreneurial Behavior and Research* 11 (1): 42–57.
- Sheeran, Paschal. 2002. "Intention-Behaviour Relations: A Conceptual and Empirical Overview." *European Review of Social Psychology* 12 (1): 1–36.
- Siu, Wai-sum, and Eric S. Lo. 2013. "Cultural Contingency in the Cognitive Model of Entrepreneurial Intention." *Entrepreneurship Theory and Practice* 37 (2): 147–173.
- Smith, Mahlon Brewster, Jerome S. Bruner, and Robert W. White. 1956. *Opinions and Personality*. New York, NY: John Wiley.

- Støren, Anne, Liv. 2014. "Entrepreneurship in Higher Education: Impacts on Graduates' Entrepreneurial Intentions, Activity and Learning Outcome." *Education & Training* 56 (8/9): 795–813.
- Suomalainen, Sanna, Pekka Stenholm, Anne Kovalainen, Jarna Heinonen, and Tommi Pukkinen. 2016. "Global Entrepreneurship Monitor; Finnish 2015 Report." Series A Research Reports A1/2016. Turku: Turku School of Economics, University of Turku.
- Swan, William B., Christine Chang-Schneider, and Katie L. McClarity. 2007. "Do People's Self-Views Matter?" *American Psychologist* 62 (2): 84–94.
- Tkachev, Alexei, and Lars Kolvereid. 1999. "Self-Employment Intentions among Russian Students." *Entrepreneurship and Regional Development* 11 (3): 269–80.
- Van Gelderen, Marco, and Paul Jansen. 2006. "Autonomy as a Start-Up Motive." *Journal of Small Business and Enterprise Development* 13 (1): 23–32.
- Wiklund, Johan, Holger Patzelt, and Dean A. Shepherd. 2009. "Building an Integrative Model of Small Business Growth." *Small Business Economics* 32 (4): 351–74.
- Wilson, Fiona, Jill Kickul, and Deborah Marlino. 2007. "Gender, Entrepreneurial Self-Efficacy, and Entrepreneurial Career Intentions: Implications for Entrepreneurship Education." *Entrepreneurship Theory and Practice* 31 (3): 387–406.
- Wilson, Fiona, Jill Kickul, Deborah Marlino, Saulo D. Barbosa, and Mark D. Griffiths. 2009. "An Analysis of the Role of Gender and Self-Efficacy in Developing Female." *Journal of Developmental Entrepreneurship* 14 (2): 105–19.
- Wilson, Fiona, Deborah Marlino, and Jill Kickul. 2004. "Our Entrepreneurial Future: Examining the Diverse Attitudes and Motivations of Teens across Gender and Ethnic Identity." *Journal of Development Entrepreneurship* 9 (3): 177–97.
- Wurthmann, Kurt. 2014. "Business Students toward Innovation and Intentions to Start Their Own Businesses." *International Entrepreneurship and Management Journal* 10 (4): 691–711.
- Yordanova, Desislava I., and Maria-Antonia Tarrazon. 2010. "Gender Differences in Entrepreneurial Intentions: Evidence from Bulgaria." *Journal of Developmental Entrepreneurship* 15, (3): 245–61.
- Zampetakis, Leonidas, Konstantinos Kafetsios, Nancy Bouranta, Todd Dewett, and Vassilis S. Moustakis. 2009. "On the Relationship between Emotional Intelligence and Entrepreneurial Attitudes and Intentions." *International Journal of Entrepreneurial Behaviour & Research* 15 (6): 595–618.
- Zhang, Ying, Geert Duysters, and Myriam Cloudt. 2014. "The Role of Entrepreneurship Education as a Predictor of University Students' Entrepreneurial Intention." *International Entrepreneurship Management Journal* 10 (3): 623–41.
- Zhao, Hao, Scott E. Seibert, and Gerald E. Hills. 2005. "The Mediating Role of Self-Efficacy in the Development of Entrepreneurial Intentions." *Journal of Applied Psychology* 90 (6): 126572.

Zunick, Peter V., Jacob D. Teeny, and Russell H. Fazio. 2017. "Are Some Attitudes More Self-Defining Than Others? Assessing Self-Related Attitude Functions and Their Consequences." *Personality and Social Psychology Bulletin* 43 (8): 1136–49.

Appendix 1. Variables and items.

Variable (all measured on a 7-point Likert scale; translated from Finnish)

Entrepreneurial intention

How likely are you to continue your career employed by another (i.e. in salaried work)? (1=very unlikely ----- 7=very likely)

How likely are you to start your own business and work as an entrepreneur at some point of your professional career? (1=very unlikely ----- 7=very likely)

How strong is your intention to embark on entrepreneurship at some point of your professional career? 1=no intention -----7=very strong

How likely are you to embark on entrepreneurship after you have gathered a sufficient amount of work experience? (1=very unlikely ----- 7=very likely)

How likely is it that you will be employed for most of your career by a company or public organization (without any connection to entrepreneurship)? (1=very unlikely ----- 7=very likely)

If you were supposed to choose between entrepreneurship and unemployment at some point of your professional career, which one would you choose? (1=unemployment ----- 7=entrepreneurship)

Subjective norm

I believe that my closest family members think I should not (1) -----should (7) strive to start my own business and to work as an entrepreneur after graduation.

How much attention do you pay to what your closest family members think if you strive to start your own business and to work as an entrepreneur after graduation? (1=not at all ----- 7=very much)

I believe that my best friends think I should not (1) -----should (7) strive to start my own business and to work as an entrepreneur after graduation.

How much attention do you pay to what your best friends think if you strive to start your own business and to work as an entrepreneur after graduation? (1=not at all ----- 7=very much)

I believe that my significant others think I should not (1) -----should (7) strive to start my own business and to work as an entrepreneur after graduation.

How much attention do you pay to what your significant others think if you strive to start your own business and to work as an entrepreneur after graduation? (1=not at all ----- 7=very much)

Perceived behavioral control (PBC)

If I established a business and started to work as an entrepreneur after graduation, my chance of success would be (1=good -----7=bad)

If I really wanted to, I could easily start a business and work as an entrepreneur after graduation (1=disagree completely -----7=agree completely)

There are very few (1)-----numerous (7) things that are beyond my own control but could prevent me from starting my own business and working as an entrepreneur after graduation.

For me, starting my own business and working as an entrepreneur after graduation (1=very easy----- 7=very difficult)

If I established my own business and started to work as an entrepreneur after graduation, my risk of failure would be (1=very small-----7=very big)

Attitudes toward entrepreneurship

To what extent do the following attributes correspond to your perceptions of entrepreneurship (i.e. establishing a business and working as an entrepreneur)?

Interesting (1=not at all -----7=completely)

Esteemed (1=not at all -----7=completely)

Dishonest (1=not at all -----7=completely)

Worth pursuing (1=not at all -----7=completely)

Boring (1=not at all -----7=completely)

Fascinating (1=not at all -----7=completely)

Despised (1=not at all -----7=completely)

Good income level (1=not at all -----7=completely)

Oppressive(1=not at all -----7=completely)