Do intentions ever die?

The temporal stability of entrepreneurial intention and link to behavior

Abstract

Purpose

This study contributes to entrepreneurial intention research by examining the Theory of Planned Behavior model in a longitudinal follow-up of the same individuals from a point at which they were studying until six to eight years after graduation and the link between entrepreneurial intention and actual behavior. The objectives of the paper are as follows: 1) to examine the development and temporal stability of entrepreneurial intention, and 2) to examine the link between entrepreneurial intention and actual start-up behavior in a longitudinal setting.

Methodology

The data for this research originate in Finland and consists three data collection waves between years 2008 and 2018. In the second wave 282 respondents were reached and in the third wave 89. For examining the stability of entrepreneurial intention, a latent growth curve modeling was used. In addition, a logistic regression analysis was conducted to examine the link between intention and behavior.

Findings

The results suggest that entrepreneurial intention is a stable construct over time. High and low levels of entrepreneurial intention remain quite stable. Entrepreneurial intention measured during study time significantly explains entrepreneurial behavior both after one to three years (Exp (B) 2,069***), and after six to eight years (Exp (B) 1,830*). Gender and role models are significant factors in predicting entrepreneurial behavior.

Value/Originality

This study provides new information on the stability of entrepreneurial intention in a rare longitudinal setting. The study verifies the value of intention measures in predicting entrepreneurial behavior in the long term.

Keywords: Theory of Planned Behavior, entrepreneurial intention, entrepreneurial behavior

1. Introduction

Entrepreneurial intention has gained wide interest in entrepreneurship research (Kolvereid, 1996; Krueger and Carsrud, 1993; Fayolle and Liñán, 2013; Kautonen, van

Gelderen and Fink, 2015). The majority of the entrepreneurial intention research is based on the Theory of Planned Behavior (TPB) developed by Ajzen (1991). TPB suggests, that intention to perform a certain behavior can be predicted with high accuracy from attitudes toward the behavior, subjective norms, and perceived behavioral control; and intention accounts for considerable variance in actual behavior (Ajzen, 1991).

Maalaoui et al. (2018) propose three major types of entrepreneurial intentions research: The first comprises studies exploring the antecedents of intention; the second attempts to explain how entrepreneurial intention can be put into action; and the last develops TPB by extending it with additional dimensions. New research agendas in entrepreneurial intention research are e.g. implementation intention (Schjoedt, 2018), collective intentions (Brännback, Carsrud and Krueger, 2018) and the influence of culture (Liñán and Jaén, 2018) but it is clear more research is still merited. There are only few studies examining the intention-behavior link (e.g. Kautonen, van Gelderen and Fink, 2015) and a longitudinal follow-up on intention development is restricted usually to only a few years and data is gathered usually with two waves (e.g. Liñán and Rodriguez-Cohard, 2015). Hence, the previous research lacks a wider longitudinal aspect, even though Sheeran and Webb (2016) argue that forming intention can be crucial to securing long-term goals.

Entrepreneurial intention is a construct that is widely used in assessing the impacts of entrepreneurial education (Longva and Foss, 2018). In addition, Global Entrepreneurship Monitor (GEM) uses the construct of entrepreneurial intention in providing research data on entrepreneurship for key international organisations like the United Nations, World Economic Forum, World Bank, and the Organisation for Economic Co-operation and Development (see https://www.gemconsortium.org/). Hence, it is important both for scholars and for policy makers to understand how temporarily stable the construct of entrepreneurial intention is and whether it explains entrepreneurial behavior in the long term.

Temporal stability of intention has been examined in other fields than entrepreneurship (Conner, Sheeran, Norman and Armitage, 2000; Conner and Godin, 2007). Temporal stability refers the extent to which a variable remains unchanged over time despite other factors (Sheeran, Orbell and Trafimow, 1999). Stable intentions are stronger predictors of behavior and even capable of overcoming one's past behavioral tendencies (Conner, Norman and Bell, 2002; Sheeran, Norman and Orbell, 1999; Conner and Godin, 2007). Therefore, it is important to investigate the temporal stability of entrepreneurial intention.

This study contributes to entrepreneurial intention research by examining the TPB model in a longitudinal follow-up of the same people from a point at which they were studying (here referred to as *study time*) until six to eight years after graduation and the link between entrepreneurial intention and actual behavior. This kind of longitudinal setting is rare in entrepreneurship research. The objectives of the paper are as follows: 1) to examine the development and temporal stability of entrepreneurial intention measured at the time of studies until years after graduation (three waves), and 2) to examine the link between study-time entrepreneurial intention and actual start-up behavior after graduation in a longitudinal setting.

2. Theoretical framework and hypothesis development

Entrepreneurial intention and Theory of Planned Behavior

Different definitions of entrepreneurial intention have been proposed in previous research. Krueger, Reilly and Carsrud (2000, 420) define intention as "the target behaviors of starting a business." Entrepreneurship is moreover a process (Gartner et al., 1994; Liñán and Chen, 2009), in which entrepreneurial intention is the first step (Lee and Wong, 2004). In this study, entrepreneurial intention refers to the commitment to starting a new business (Krueger and Carsrud, 1993) after a student graduates.

TPB suggests that intention is influenced by attitudes, social norms, and perceived behavioral control and that intention is an antecedent of behavior (action) (Ajzen, 1991, 188). Ajzen (1991, 188) defines three conceptually independent determinants as follows: "The first is the attitude toward the behavior and refers to the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question. The second predictor is a social factor termed subjective norm; it refers to the perceived social pressure to perform or not to perform the behavior. The perceived behavioral control refers to people's perception of the ease or difficulty of performing the behavior of interest."

The TPB model has been widely applied in entrepreneurship research (Maalaoui et al., 2018; Liñán and Fayolle, 2015). However, there is a research gap concerning the stability of entrepreneurial intention over the long term and the link between intention and actual behavior. There are only few studies examining the individual-level development of entrepreneurial intention in a longitudinal setting. Liñán, Rodriguez-Cohard and Guzmán (2011) were the first to analyse temporal stability of entrepreneurial intention in a longitudinal study. They concluded that entrepreneurial intention is a quite stable construct. However, they had only two data waves and a three-year time period in their study. Varamäki, Joensuu and Viljamaa (2015) showed that the entrepreneurial intentions of students in higher education decreased over time. Intention decreased particularly noticeably for those whose level of intention was initially high, whereas the group whose intention increased rose from a low to a neutral level of intention. However, that study only examined the development of intentions during the period of studying. Liñán and Rodriguez-Cohard (2015) had also a three-year time period while examining the stability of entrepreneurial intention with graduates. Hence, no research of longer time periods examining the stability of entrepreneurial intention exists.

Ajzen (1996) argues that intention should be reasonably stable over time in order to predict behavior. This is the basic assumption of Theory of Planned Behavior. In addition,

Bratman (1992) argues that the concept of intention stability is important for the theory of action and stability of prior intentions lies in the rational resistance to reconsideration. In the light of earlier research of Liñán and Rodriguez-Cohard (2015) and arguments of Bratman (1992), we hypothesize entrepreneurial intention to be stable over time.

The link between intention and behavior

The correlation between intention and behavior has been reported to be as high as 0.9–0.96 (Ajzen et al., 2009). As Sheeran and Webb (2016) demonstrate, numerous correlational studies indicate that intention predicts behavior and offers superior prediction of behavior compared to other cognitions including attitudes, norms, self-efficacy, and perceptions of risk and severity. In the context of entrepreneurial intention, Liñán and Rodriguez-Cohard (2015) showed that entrepreneurial intention significantly explain start-up behavior over a three-year time period. However, Kautonen, van Gelderen and Fink (2015) argue that despite the predictive accuracy of self-reported entrepreneurial intention, in some cases entrepreneurial behavior can occur without such intention. Entrepreneurship can emerge in surprising situations; in fact, as Varamäki et al. (2014) show, some students went on to become entrepreneurs even though they initially had weak entrepreneurial intention. This should be taken into account when examining the link between entrepreneurial intention and entrepreneurial behavior. More research on intention-behavior link is required as very few attempts have been made (Liñán and Rodriguez-Cohard, 2011; Schlaegel and Koenig, 2014).

In addition to intention, perceived behavioral control (PBC) may have an effect on actual behavior. Ingram et al. (2000) found that PBC has a direct effect on start-up behaviors (see also Townsend et al., 2010). In addition, Kautonen, van Gelderen and Tornikoski (2013) found that PBC contributes to the prediction of behavior over and above its mediated influence via intention. In fact, Ajzen (1991) suggests that PBC has a double role in the TPB: to the extent

that PBC is realistic, that is, the subject's perceptions are realistic, PBC also predicts the actual behavior instead of full mediation via intention. Ajzen (1991) also emphasizes that the relative importance of intention and PBC in the prediction of behavior may vary across situations and different behaviors. If a person has complete control over behavioral performance, intention alone should be sufficient to predict behavior, and thus, the importance of PBC increases as volitional control over the behavior declines (Ajzen, 1991).

Examining the link between study-time entrepreneurial intention and actual behavior after graduation can be problematic, since Ajzen (1991) argues that intention must remain stable in the interval between its assessment and observation of the behavior. As time passes, several factors can affect the stability of intention; for example, intervening events or new information can change intentions. In addition, as the time of actual behavior approaches, habitual behavioral patterns can lead to an outcome other than that intended. Kiriakidis (2015) argues that in general, the practical utility of the intention–behavior model is significant when the intention–behavior relationship is stable. However, Ajzen (1985) suggests that the predictive accuracy of the model could be valid for long-term prediction as well, if the prediction is at the aggregate level and not at the individual level. Aggregate intention is assumed to be more stable over time than individual intention. Despite these restrictions, it is interesting to examine the predictive value of study-time entrepreneurial intention on entrepreneurial behavior after graduation. Kautonen, van Gelderen and Fink (2015) demonstrated the relevance of TPB in the prediction of business start-up intention and behavior (intention and PBC explained 31 % of the variation in behavior), albeit their research covers only a one-year period. Liñán and Rodríguez-Cohard (2015) also demonstrated a link between intention and actual start-up in a three-year study, despite the fact that the degree of start-up variance explained by EI was limited (12.8 percent). However, studies investigating longer periods between entrepreneurial intention and actions are nonexistent.

Other factors affecting the development of entrepreneurial intention

Numerous studies have demonstrated that gender has an effect on the formation of entrepreneurial intention and actual start-up behavior (Liñán and Chen, 2009; Yordanova and Tarrazon, 2010; Joensuu et al., 2013). Men have a stronger entrepreneurial intention and start businesses more often than women do. Another important factor affecting entrepreneurial intention and behavior is a role model, a factor that previous research shows has a positive effect on entrepreneurial intention and actual start-up behavior (Liñán and Chen, 2009; Prodan and Drnovsek, 2010; Engle et al., 2010).

Theoretical model and hypothesis development

Hence, based on the previous literature on entrepreneurial intention and the TPB model, we propose the following hypotheses:

H1: Entrepreneurial intention is stable over time.

H2: Entrepreneurial intention explains entrepreneurial behavior both in the short and long term.

As gender and role models have been proven to have an effect on entrepreneurial intention in numerous studies, we add these as control variables in our study when examining the link between entrepreneurial intention and entrepreneurial behavior.

Figure 1 presents the conceptual model for hypothesis 2. The model will be tested separately in the short term (1-3 years after graduation) and in the long term (6-8 years after graduation).

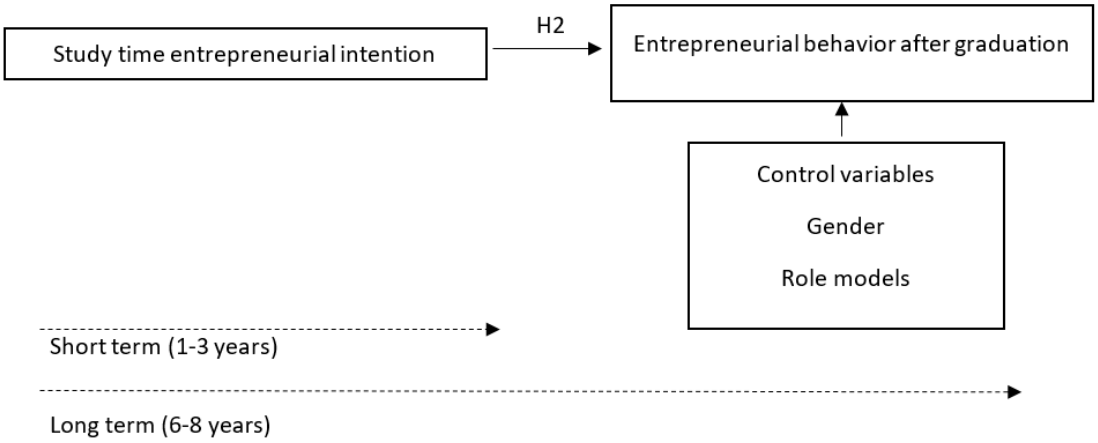

Figure 1. Conceptual model for testing the link between entrepreneurial intention and entrepreneurial behavior.

3. Methodology

Data gathering

The data for this research originate in Finland. The first data collection was conducted between 2008 and 2012 and involved all the students studying at the Seinäjoki University of Applied Sciences during that period. Students answered the Entre Intention questionnaire (presented below) each year they were enrolled at the university. The follow-up data collection (second wave) was conducted in 2013. The follow-up questionnaire was sent to students who had graduated in the years 2009 to 2012 inclusive. This means that at the time of the data collection, some of the students had graduated one year previously and some four years previously. The data collection process elicited 1 045 responses in total. In the next stage the research team merged the data from the first data collection (taken during study time) and the second wave. The purpose was to find two measurement waves for each student (values for the same student from the study time and after graduation). A measurement result from the study time was found for 282 graduates. None of those students had graduated in the year 2009, thus for the relevant respondents, between one and three years had passed since graduation. A total

of 64 percent of the respondents had graduated a year before the second wave measurement; 32 percent two years previously; and four percent three years previously.

A third data gathering round (the third wave) was conducted for these same 282 graduates in 2018 when between six and eight years had passed since they graduated. The third round elicited 89 responses from the 282 graduates approached (a response rate of 32 %). Of those respondents, 64 percent had graduated six years prior to the third measurement wave; 30 percent had graduated seven years previously; and six percent eight years previously.

The issue of data loss in longitudinal settings is a well-known one. To examine the differences between the second and third wave measurements, we compared the demographics of the respondents between these data sets. In the second wave (282 respondents) 73 percent of the respondents were women and 27 percent men. Of the respondents, 19 percent had a mother working as an entrepreneur and 37 percent a father working as an entrepreneur. Most of the respondents had graduated in social services or health and sports (40 percent), followed by social sciences and business and administration (23 percent), and then by technology, communications and transport (17 percent). In addition, 14 percent had graduated with degrees in fields related to culture and six percent in fields related to natural resources and the environment. As in the second wave, the third wave (89 respondents) featured more women (67 percent) than men (33 percent). Of those 89 respondents, 14 percent had a mother working as an entrepreneur and 32 percent had a father working as an entrepreneur. Most of the respondents had graduated with degrees in the fields of social services or health and sports (39 percent). A further 19 percent had obtained degrees in the field of social sciences and business and administration, and 16 percent in the fields of technology, communications and transport. A few respondents had graduated in the fields of culture (12 percent), natural resources and the environment (8 percent), natural sciences (3 percent) or from the fields of tourism, catering, and domestic services (2 percent). Given no statistically significant differences concerning

study field, gender or level of parental entrepreneurship between the second and third waves, selective attrition did not appear to be affecting this longitudinal data.

However, it is impossible to compare these waves to the first data collection, because it consists of answers from different years (from the year 2008 to the year 2012). For some description, in year 2012 there were 1 522 answers of which 56 percent were from women. 17 percent had mother working as an entrepreneur and 37 had father working as an entrepreneur. 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). 13 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. When considering response bias, the first data presents quite well the basic student population in regard to gender and study fields. However, we do not have data concerning parental level of entrepreneurship from the students who did not reply.

The data from the second and third wave represent quite well the basic student population, except that there are more women among the respondents. This should be noted when considering the limitations of the study.

Measurement instrument and variables

The data were gathered via the Entre Intention measurement instrument. This instrument was developed in Finland and is based on the TPB model measuring entrepreneurial intention, attitudes to an entrepreneurial career, the subjective norm, and PBC. In addition, there are questions concerning entrepreneurship studies and background variables. The scales are largely based on the work of Kolvereid (1996) and Tkachev and Kolvereid (1999). All the items used in this research are presented in Appendix 1. In the following, the estimates from the third data wave (year 2018) are presented.

- Entrepreneurial Intention was measured with a 7-point Likert scale. An index of entrepreneurial intention was created by averaging six items (min=1.2, max=7.0, mean=3.5, sd=1.5). The reliability of the scale was good (Cronbach's alpha=0.91).
- Entrepreneurial behavior (start-up behavior) was measured through a dichotomy (1=working as an entrepreneur, 2=other). In the analysis phase, we combined full-time and part-time entrepreneurs, as we classified part-time entrepreneurship as being entrepreneurial behavior.
- Gender was operationalized as zero for women and one for men.
- To operate logistic regression analysis, we differentiated the entrepreneurial role models of the mother and father as having a mother working as an entrepreneur (coded 1) or not (coded zero) and having a father working as an entrepreneur (coded 1) or not (coded zero).

First factor analysis was used to assess unidimensionality of the entrepreneurial intention scale. Factor analysis was appropriate for the data according to Kaiser-Meyer-Olkin measure (.86). From the six items measuring entrepreneurial intention, one single factor was extracted. This factor accounted 71 percent of the variance of entrepreneurial intention with eigenvalue 4.248. All factor loadings were above .50. Hence, we conclude that entrepreneurial intention measure is reliable.

Methods of analysis

To analyze the stability of entrepreneurial intention, we used latent growth curve modeling with Amos (SEM). Latent growth curve modeling is a suitable method when examining intra- and inter-individual variations (Byrne, 2010). In this research the development of entrepreneurial intention of the same individual is analyzed with three data waves. Latent growth curve modeling estimates growth trajectories of individuals, enabling the

evaluation of initial state and growth rate (McArdle and Nesselroade, 2003). Latent growth curve model has two parameters: 1) an intercept parameter and 2) a slope parameter. The intercept parameter represents an individual's score of entrepreneurial intention at the initial state and the slope parameter represents the individual's rate of change over the time (Byrne, 2010). In this research there are three measurement waves obtained from 89 individuals. Two-factor latent growth curve modeling was used to examine the growth of entrepreneurial intention. The Intercept describes the initial level of entrepreneurial intention (intercept mean) and individual differences in initial level (intercept variance). The factor loadings for intention were set at 1 for each time (intercept is a constant for the individual). The second factor is the Slope factor, which describes the rate of change (slope mean) and individual differences in growth patterns (slope variance). For testing a linear growth model, these factor loadings were fixed to correspond to a linear time scale in order to test the growth model with structural equation modeling.

There are several goodness of fit indices that can be evaluated. Byrne (2010) suggests the Model Chi-Square, in which the p-value should be above 0.05; Normed Fit Index (NFI), which is an incremental measure of fit and should be above 0.90; Comparative Fit Index (CFI), which is a revised form of NFI but not so sensitive to sample size and should be above 0.90; TLI, which should be above 0.95; and RMSEA, which is an absolute measure of fit and is based on the non-centrality parameter. For RMSEA, MacCallum, Browne and Sugawara (1996) suggest cutoff value of 0.08 for mediocre fit. However, RMSEA is not a good index for small samples as Kenny, Kaniskan and McCoach (2015) argue. They show that there is a greater sampling error for small degrees of freedom and small sample size models, which produces artificially large values of the RMSEA. They suggest that for small samples and with low df, RMSEA should not be computed. For this research, as suggested for small sample size of 89 individuals and low df (2), we used the fit indices of Model Chi-Square, NFI, TLI and

CFI. For evaluating the sufficient sample size using SEM, the recommendation of Mitchell (1993) was followed. Hence, a model should contain at least 10 times as many observations as variables. Our model has eight variables and 89 observations, hence the sample size is large enough for using latent growth curve modeling.

To examine the link between entrepreneurial intention as expressed during the time of studying and entrepreneurial behavior after graduation, we used logistic regression analysis. Logistic regression analysis is suitable in situations where the dependent variable is dichotomous (working as an entrepreneur or not). The logistic regression analysis differentiated the entrepreneurial role models of a mother and father (see variable coding above). The link between entrepreneurial intention and behavior was tested with two time frames: the first period was from time of the study until one to three years after graduation and the second was from time of the study until six to eight years after graduation.

4. Results

For examining the stability of entrepreneurial intention, a latent growth curve model was examined as presented in Figure 2. The model of growth produced a good fit: Model Chi-Square: 7.713 with a non-significant p-value of 0.052, NFI: 0.930, CFI: 0.956, TLI: 0.956.

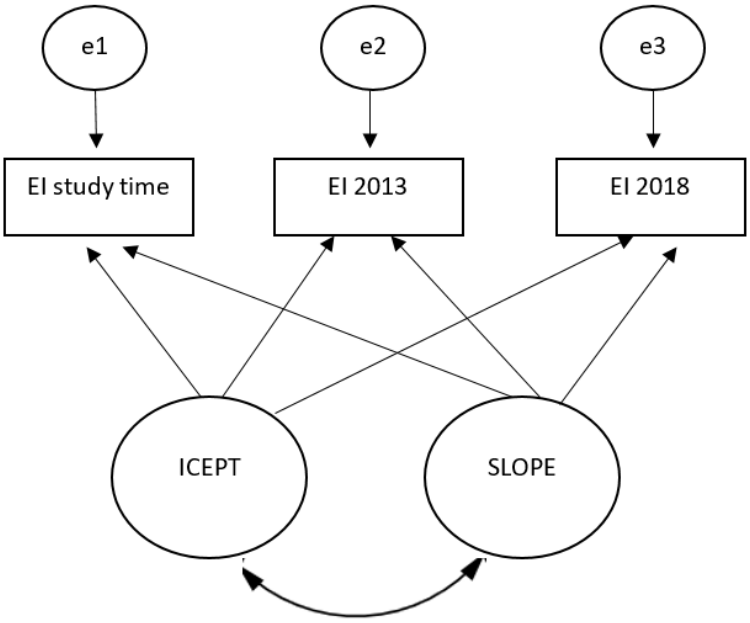

Figure 2. Latent growth curve model for examining the stability of entrepreneurial intention.

Table 1 presents the estimates of the growth parameters. The estimated mean for intercept is 3.3. This means that at the beginning of the studies, the mean value of entrepreneurial intention is 3.3. The mean estimate for the slope mean is 0.05. This indicates a slightly positive growth rate. However, p-value ($p>.05$) is not significant. This reveals the stability of entrepreneurial intention in 6-8-year time period. The covariance between the initial state and growth rate is 0.055. P value ($p>.05$) is not significant, which shows that initial level is unrelated to the rate of change. This can be interpreted that individuals with low and high initial level of entrepreneurial intention experience similar growth trajectories. As the growth rate (slope) was not significant, low and high levels of entrepreneurial intention of individuals are stable across time. Hence, hypothesis 1 is supported. Entrepreneurial intention is stable over time. The variance related to intercept is significant. This means that there are strong inter-individual differences in initial scores of entrepreneurial intention. The variance related to slope is not significant. This reveals that there are no inter-individual differences in the growth trajectories of entrepreneurial intention.

Table 1. Estimates of growth parameters of the linear model.

	Estimate	**S.E**	**C.R.**	**P**
Means				
ICEPT	3.323	0.126	26.428	***
SLOPE	0.053	0.026	2.022	-
Covariances				
ICEPT ←→SLOPE	0.055	0.038	1.464	-
Variances				
ICEPT	0.822	0.227	3.629	***
SLOPE	0.011	0.012	0.886	-
E1	0.636	0.096	6.633	***
E2	0.636	0.096	6.633	***
E3	0.636	0.096	6.633	***

*** indicates significance at the 99 % level

We used logistic regression analysis to examine the link between entrepreneurial intention at the time of study and actual start-up behavior after graduation in a longitudinal setting. The conceptual model was tested separately for the second wave and for the third wave to discern if there were differences with these time intervals.

In the second wave (1–3 years after graduation, n=282), 17 graduates had become entrepreneurs. We tested a model where entrepreneurial intention at the time of study, gender (male), and role models (mother's and father's entrepreneurial career) explain entrepreneurial behavior (part- or full-time entrepreneurship). Gender and role models are categorical variables in the model. The results of the analysis are presented in Table 2. Gender (male) explains entrepreneurial behavior significantly (Exp (B) 4,400**). The results reveal that a male is 4.4 times more likely to embark on entrepreneurial behavior than a female is. Study-time entrepreneurial intention is also significant in the model (Exp (B) 2,069***); however, role models do not explain entrepreneurial behavior one to three years after graduation. The test developed by Hosmer and Lemeshow produces a non-significant chi-square (5.908) which indicates that the data fits the model well. Moreover, the Omnibus Tests of Model Coefficients produce a significant chi-square (29,571***), which shows that the overall model predicts the

dependent variable. The model classifies 99 percent correctly those students who do not start a firm but only 12 percent correctly the students who do. The problem is usual in situations where the occurrence of the dependent variable is rare, as is the case here (17 out of 282). The Nagelkerke R^2 value is .24. Even though the R^2 value is not very high, Omnibus test verifies that the model can predict the dependent variable. However, other factors not included in this model may exist that also explain entrepreneurial behavior. This model only verifies the fact that entrepreneurial intention has some predictive value.

Table 2. Logistic regression analysis on entrepreneurial behavior 1-3 years after graduation (n=282).

	B	S.E.	Wald	Sig.	Exp(B)
Study-time entrepreneurial intention	.727	.227	10.289	***	2.069
Entrepreneurial role model (mother)	-.725	.715	1.028	.311	.484
Entrepreneurial role model (father)	.328	.575	.326	.568	1.389
Gender (male)	1.482	.527	7.912	**	4.400
Constant	-5.792	.888	42.514	***	.003

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

The third wave (6–8 years after graduation, n=89) captures the data on 13 entrepreneurs. The mean value of entrepreneurial intention of these entrepreneurs was 5.1 during their study time, which contrasts markedly with that of the other respondents, whose mean value was 3.2. That difference in the mean values is significant (p=.000). Logistic regression analysis verifies that entrepreneurial intentions measured six to eight years previously do significantly explain entrepreneurial behavior in the year 2018 (Exp (B) =1,830*) (see Table 3). In addition, gender (Exp (B)=12,339**) and role models (father as an entrepreneur, Exp (B)=14,147**) had value in the model. The results reveal that the odds of entrepreneurial behavior are as much as 12 times higher for male respondents than for female respondents and 14 times higher for respondents whose father is an entrepreneur. The tests of Hosmer and Lemeshow (non-

significant chi-square 12,991), and Omnibus (20,715***) provide good values for the model. The Nagelkerke R^2 value is .37. There is the same problem on rare occasions in this analysis as there was with the second wave; the model is able to correctly classify 23 percent of the respondents who become entrepreneurs and 99 percent of those who do not.

As Ajzen's TPB-model suggests, PBC can have a direct effect on behavior. Hence, we tested another logistic regression model adding the variable of PBC in the model. However, the effect of PBC was not significant, and adding it to the analysis weakened the whole model. Hence, PBC was not included in the final model.

Table 3. Logistic regression analysis on entrepreneurial behavior six to eight years after graduation (n=89).

	B	S.E.	Wald	Sig.	Exp(B)
Study-time entrepreneurial intention	.605	.315	3.688	*	1.830
Entrepreneurial role model (mother)	-.480	.978	.241	.675	.619
Entrepreneurial role model (father)	2.650	1.046	6.417	*	14.147
Gender (male)	2.513	.992	6.419	**	12.339
Constant	-6.225	1.672	13.864	***	.002

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

Hypothesis 2 is supported in that entrepreneurial intention measured in the course of a person's studies explains entrepreneurial behavior both one to three years after graduation and six to eight years after graduation. Gender (male) as a control variable has an effect on start-up behavior. Having an entrepreneurial parent as a role model did not explain entrepreneurial behavior one to three years after graduation but after six to eight years, the importance of a father's entrepreneurial career was significant.

5. Discussion

The first objective of this paper was to examine the development and temporal stability of entrepreneurial intention over time from the time of studying until six to eight years after

graduation. The results show that in general, entrepreneurial intention level slightly increases after studies are completed. However, this change is not significant as the results of the latent growth curve model showed. This means that the strong entrepreneurial intention evident during study time remains visible after six to eight years. In addition, low entrepreneurial intentions measured during study time are still low six to eight years after graduation. This result suggests that entrepreneurial intention is a quite stable construct. The temporal stability of entrepreneurial intention has not been investigated much in previous research except for the study by Liñán, Rodriguez-Cohard and Guzmán (2011). Their sample provided evidence of the existence of a long-term relation even though their time period was significantly shorter than in this research. Hence, their findings give support for the suggestions of this research.

The second objective of this study was to examine the link between study-time entrepreneurial intention and actual start-up behavior after graduation in a longitudinal setting. Entrepreneurial intention measured during study time significantly explains entrepreneurial behavior even after six to eight years. There is a link between intention and behavior both after a few years and after several years. This shows the value of intention measures in predicting entrepreneurial behavior in the long term. Liñán and Rodríguez-Cohard (2015) also conducted a longitudinal study to examine the link between entrepreneurial intention of final year students and actual start-up behavior after three years. They also found that entrepreneurial intention significantly explains actual start-up behavior. The results of the present study confirm the findings of Liñán and Rodríguez-Cohard (2015) in a much longer time frame. In addition, this present study provides three time-waves, which makes possible to use latent growth curve analysis to add new knowledge about the stability of entrepreneurial intention. In addition, we tested the link between PBC and entrepreneurial behavior in a longitudinal setting as suggested by the TPB. This link proved to be non-significant, hence it was not included in the final model.

This result supports the findings of Liñán and Rodríguez-Cohard (2015), who similarly found the path from PBC to start-up behavior to be non-significant.

Ajzen's (1991) TPB model has predictive value in explaining entrepreneurial behavior in a longitudinal setting. This is interesting, because Ajzen (1991) argues the importance of stability of intention and PBC in the interval between their assessment and observation of the behavior. It seems likely that many other factors can affect the entrepreneurial intention of individuals over a six to eight-year time interval. However, the results from this study show that high and low levels of entrepreneurial intention remain quite stable, which verifies the applicability of the TPB model in explaining entrepreneurial behavior in a longitudinal setting.

The temporal stability of intention has been studied also in fields other than entrepreneurship. Conner, Sheeran, Norman and Armigate (2000) showed that when intentions were stable, they were stronger predictors of behavior in the field of health research. It could be argued that since entrepreneurial intention proved to have temporal stability, it also has stronger predictive power.

A second interesting issue is Ajzen's (1985) assumption that for long-term prediction, aggregate intention could be more accurate than individual intention. In this study, individual intention did explain entrepreneurial behavior in the long term. However, the predictive value of the model decreases over time. In the data measuring entrepreneurial behavior one to three years after measuring intention, the significance of entrepreneurial intention was higher than when entrepreneurial behavior was measured six to eight years after the measurement of intention; nevertheless, in both cases entrepreneurial intention has some predictive value. Results suggest that TPB works better in a short time span. The longer the time between intention measure and actual behavior, the weaker is the explanatory power of intention measure. Interestingly, six to eight years after graduation the predictive values of gender and a father working as an entrepreneur (serving as a role model) in explaining entrepreneurial

behavior are extremely high even though role models did not explain entrepreneurial behavior one to three years after graduation.

Ajzen (1991) also suggests that if a person has complete control over behavioral performance, intention alone should be sufficient to predict behavior. It could be argued that a person does not have complete control over entrepreneurial behavior, because entrepreneurship requires other factors than intention, such as resources and market opportunities. Hence, intention alone should not be sufficient in predicting the behavior. Interestingly, this was not the case in this research. In the data collected one to three years after graduation, mere intention significantly explained entrepreneurial behavior. This could be interpreted as support for the argument that, in the case of entrepreneurial behavior, entrepreneurial intent is in fact more important than, for example, opportunities offered by the environment. However, it should be remembered that entrepreneurial behavior does not require previous entrepreneurial intention in all cases. Katz (1989) found that many business founders did not have a strong entrepreneurial intention a few years before they started their business. There are also some individuals in our data set that started a business after graduation although they had a low entrepreneurial intention at the time of their study.

Entrepreneurial intention does not always lead to immediate action. Carsrud and Brännback (2011) highlight the importance of the effect of time. This research shows that intention can indeed lead to entrepreneurial behavior after several years. Carsrud and Brännback suggest that motivation may be the spark that transforms a latent intention into real action and therefore, the missing link between intention and action. This is also an area of further research.

This study confirms that measuring entrepreneurial intention during study time is relevant. Individuals with high levels of entrepreneurial intention can be identified and offered special support. The study contributes to research in the field by presenting an analysis of an

extraordinary dataset, allowing follow-up of individual students until several years after graduation. Individual-level longitudinal follow-up studies are rare. The results demonstrate the relevance of students' entrepreneurial intentions and their antecedents for actual entrepreneurial behavior. Further research following the same individuals to measure whether high-level entrepreneurial intention is still evident after tens of years would be interesting. In addition, it would be interesting to test the full TPB model in a longitudinal setting. This research showed that PBC measured years before entrepreneurial behavior did not have a direct effect on the behavior in contrast to TPB. Liñán and Rodríguez-Cohard (2015) did not find a direct effect of PBC on intentions either. However, they found a mediating effect of PBC via intentions. This should be tested in a longer time span.

There are some limitations to this research. First, the data come from one country and from one region, which can affect the results. Second, the three-wave dataset is quite small and only a few respondents had become entrepreneurs. This limits the generalizability of the results. In addition, there are more women in the data than in the student population as a whole. This can have an effect on the results. Hence, we can summarize that this research is exploratory in nature and further studies are needed. However, longitudinal data gathering is demanding, and we believe this study brings new knowledge despite these restrictions.

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Appendix 1. Variables and their 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) after graduation)? (1=very unlikely ----- 7=very likely)

If you were to choose between entrepreneurship and salaried work after graduation, which would you choose? 1=salaried work ----- 7=entrepreneurship

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 sufficient 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 a public organization (without any connection to entrepreneurship)? (1=very unlikely ----- 7=very likely)

If you were to choose between entrepreneurship and unemployment after graduation, which would you choose? (1=unemployment ----- 7=entrepreneurship)