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Entrepreneurial Intent among Students in Scandinavia and in the USA

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ABSTRACT *An application of the theory of planned behaviour is developed here to analyse factors influencing entrepreneurial intent among university students. The study provides a test of the robustness of the intent approach using international comparisons. The samples are from Finland (Helsinki University of Technology), Sweden (Linköping University), USA (Stanford University and University of Colorado, Colorado Springs), and the UK (London Business School). The international comparisons indicate a good robustness of the model. Perceived behavioural control emerges as the most important determinant of entrepreneurial intent.*

Key words: Entrepreneurial intent; Theory of planned behaviour; Student entrepreneurship; Academic entrepreneurship

1. Introduction

During recent years, an increasing number of studies have used the theory of planned behaviour as the theoretical framework when studying entrepreneurial intent and entrepreneurial career choice (Shapero, 1982; Bird, 1988; Krueger, 1993; Krueger & Carsrud, 1993; Davidsson, 1995; Kolvereid, 1997). Such studies emphasize the intentional, expectancy-driven, and situational nature of the entrepreneurial decision, thus complementing the more deterministic view of the trait and demographic lines of entrepreneurship research. It is widely acknowledged that the 'trait' and, at least where predictive value is concerned, also the 'demographic' lines of entrepreneurship research have long ago reached a saturation point, and further attempts in this line are only likely to produce diminishing returns (Gartner, 1988; Robinson *et al.*, 1991).

One problem of the 'trait' line of research was that it focused on ex-post situations, on entrepreneurs who already had started a firm. By collecting personality data on an entrepreneur after the entrepreneurial event, the researcher makes an assumption that the entrepreneur's traits, attitudes, and beliefs do not change because of the entrepreneurial experience itself (Gartner, 1988; Gartner, 1989). This is a strong assumption. For a well known example, the high locus-of-control

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ratings reported in many such studies may be simply due to the fact that entrepreneurs tend to be more in control.

Criticizing the ex-post rationalization tendency of 'trait' studies, Gartner (1989) posits that individuals seldom behave consistently in different times and situations, and that personality traits are not good predictors of future action. Therefore, to demonstrate causality, one should study individuals before the entrepreneurial event.

A more fundamental problem with the 'trait' line of research is the fairly strong assumption of determinism, in the sense that a fairly strong causal link was expected between personality traits (and demographic variables) and entrepreneurial behaviour. For the 'trait' approach to work well, individuals should really be more or less prisoners of their own personal traits and social situation, and there would be little room for personal expectations, situational factors, and social valuations to influence individual decision making. In extremis, individual choice would not exist, and individuals would need to behave more or less like preprogrammed robots, should the assumptions behind the trait line of research apply.

Perhaps luckily, the investment in research on the link between personal traits and entrepreneurial activity failed to establish any strong relationships. It became clear that the deterministic view of entrepreneurial action needs to be refined. In research on cognitive psychology, one way around this problem has been to apply the principle of aggregation (Ajzen, 1988). It has been shown that aggregating different behaviours over different situations, the clouding effect of situational influences is cancelled, and fairly strong relationships between personality traits and aggregated behaviours can be established (Ajzen, 1991).

The problem with the aggregation principle is, however, that it does not permit prediction of behaviour in any given situation. This is what the theory of planned behaviour is designed to do (Ajzen and Fishbein, 1980; Ajzen, 1987, 1991; Kim and Hunter, 1993). Building on the theory of reasoned action, the theory of planned behaviour focuses on situations in which an individual has incomplete volitional control, that is, on situations in which the individual cannot decide entirely at will whether to perform a certain behaviour or not. Instead, in order for the individual to perform the behaviour, she needs to exercise a sufficient degree of actual and perceived control over the behaviour itself and over the outcome of the behaviour. In other words, the person needs to have sufficient confidence that the behaviour is possible, and that the outcome of the behaviour will be positive.

Such features make the theory of planned behaviour well suited to the study of entrepreneurial behaviour. Starting up a new firm clearly falls into the category of planned behaviour, as few firms are started by accident. The process of starting a new firm is one during which the individual may be expected to form expectations and valuations regarding the desirability of this behaviour and the outcome of it. Furthermore, individuals seldom have complete control over the process: the ability of an individual to start a new firm often depends on external factors, such as availability of funding and resources, presence of opportunity, and on the perceived and actual competencies of the individual herself.

While there exists a growing body of empirical applications of the theory of planned behaviour in entrepreneurial situations, (Krueger, 1993; Krueger & Carsrud, 1993; Davidsson, 1995; Kolvereid, 1997) this line of research is still very much in its inception stage. Much remains to be done in order to develop and empirically validate constructs, and to demonstrate the robustness of this approach. This study, strives to contribute toward these goals by developing an application of the theory of planned behaviour in studying determinants of entrepreneurial intent

in university environments. The application with data from three countries, Finland, Sweden, and USA (the states of California and Colorado) will be tested. To our knowledge, this is the first study in which the robustness of the theory of planned behaviour is tested using an international comparative sample.

2. Theory of Planned Behaviour

The theory of planned behaviour (Ajzen and Fishbein, 1980; Ajzen, 1987; Ajzen, 1991) suggests three conceptually independent antecedents of intention, see Figure 1. The first is the attitude toward the behaviour. This refers to the degree to which a person has a favourable appraisal of the behaviour. The second predictor of intention is subjective norm. This refers to the perceived social pressure to perform the behaviour. The third antecedent of intention is the degree of perceived behavioural control. This refers to the perceived ease of performing the behaviour and to the perceived control over the outcome of it. The more favourable the attitude and subjective norm with respect to the behaviour, and the greater the perceived behavioural control, the stronger the intention to perform the behaviour should be.

The central construct of the theory of planned behaviour is the individual's intention to perform a certain behaviour. This intention is considered to be influenced by perceived behavioural control (PBC), which is the sum of the individual's actual control of the behaviour and her perceptions regarding this control. The PBC thus captures the actual situation as well as the expectations of the individual as to the success of the behaviour. Together with intent, PBC is considered to influence eventual behaviour, too.

The two other antecedents of intent, subjective norm and attitude toward the behaviour, are assigned a supporting role in the theory. This is in the sense that while these two are expected to influence intent, the role of PBC is seen as decisive for action. If the person does not perceive to have control over the behaviour and its

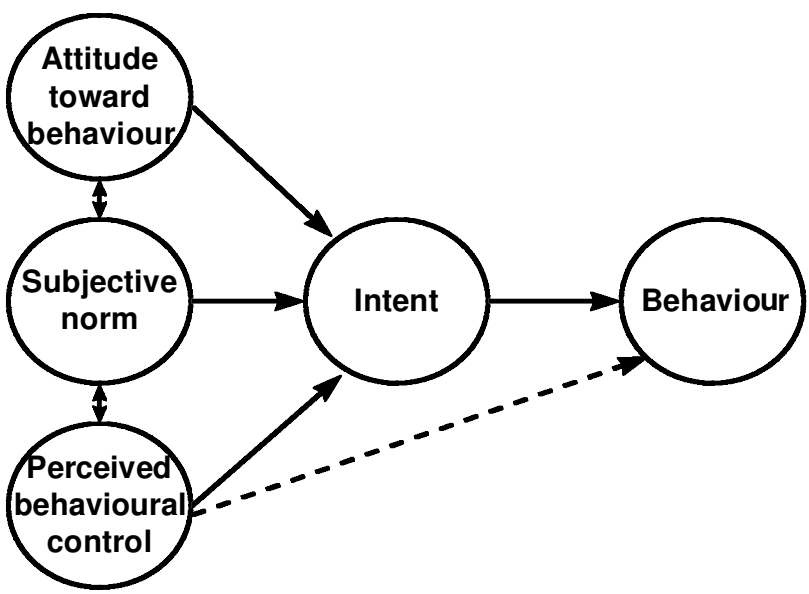

Figure 1. Illustration of Ajzen's theory of planned behaviour (Ajzen, 1991).

outcome, intentions are not likely to lead to behaviour, even though subjective norm and attitudes toward the behaviour would be favourable.

Many of the elements of the theory of planned behaviour are similar to the ones proposed in expectancy theory. As applied by Shapero (1982) in the context of entrepreneurial behaviour, the expectancy theory proposes three main antecedents of entrepreneurial intentions, namely, perceived feasibility, perceived desirability, and propensity to act. In addition, Shapero predicts that perceived feasibility and perceived desirability are influenced by the breadth and positiveness of previous entrepreneurial experience. Of these constructs, perceived desirability and perceived feasibility are close to the theory of planned behaviour's attitude toward behaviour and perceived behavioural control. The main difference between these two is that propensity to act is replaced by subjective norm. In other words, the theory of planned behaviour emphasizes the role of prevailing social norms more than does Shapero's version of the expectancy theory, which puts more emphasis on the characteristics and previous entrepreneurial experience of the individual.

It seems clear that both theories, expectancy theory and the theory of planned behaviour, have at least some face validity. They also complement each other, in that the theory of planned behaviour puts more emphasis on the social norms, while the expectancy theory emphasizes the individual. Thus, both theories can be expected to contribute to a better, while perhaps not complete, understanding of entrepreneurial behaviours.

3. Empirical Studies

The theory of planned behaviour has been successfully used to predict and explain a wide range of human behaviours, ranging from voting decisions, problem drinking, and losing weight to leisure intentions and taking physical exercise (for an overview of studies, see Ajzen, 1991). Attitudes have been shown to explain approximately 50% of the variance in intentions, and that intentions explain approximately 30% of the variance in behaviour. These accuracies compare favourably with trait measures, which typically explain approximately 10% of the variance in behaviour (Ajzen, 1987; Kim and Hunter, 1993). In general, the empirical tests suggest that the greater the degree to which the behaviour can be controlled, the greater is the influence of intent on eventual behaviour.

In the context of entrepreneurship, the theory of planned behaviour has been increasingly used in the 1990's, together with other, mostly expectancy-driven theories focusing on entrepreneurial intent (Shapero, 1982; Bird, 1988; Bird, 1992; Krueger, 1993; Krueger and Carsrud, 1993; Krueger and Brazeal, 1994; Davidsson, 1995; Reitan, 1996; Kolvereid, 1997). Expectancy-driven frameworks for explaining entrepreneurial intent have been proposed earlier by Shapero (1975, 1982) and Bird (1988). Yet, practical applications of intent models remained relatively few until 1990's. Even Shapero's model remained untested until Krueger's (1993) study. Shapero proposed that the intent to start a business, what Shapero terms credibility, derives from perceptions of both desirability and feasibility, as well as from a propensity to act upon opportunities. In their comparison between the theory of planned behaviour and Shapero's model, Krueger and Brazeal (1994) found major overlaps between these two.

Krueger (1993) concentrated on measuring the effect of prior entrepreneurial exposure, through perceptions of feasibility and desirability, on intention. Krueger split Shapero's exogenous influence items of entrepreneurial experience into two

groups: the positiveness and the breadth of entrepreneurial experience. Propensity to act was shown to have links to perceived desirability and feasibility, in addition to the expected link directly to entrepreneurial intentions. The model explained approximately 50% of the variance in intentions.

Krueger called for richer models and for more refined measures. Such models were tested by Davidsson (1995) and Reitan (1996). Davidsson proposed an economic-psychological model of factors influencing individuals' intentions to go into business for themselves. In the model, Davidsson tried to combine relevant parts of previously published models, as well as making a clear effort to adjust the model to be more specifically suited to the study of entrepreneurial intent. A central construct in his model was 'entrepreneurial conviction', which he showed to be the main determinant of entrepreneurial intent. The entrepreneurial conviction, as defined and operationalized by Davidsson, corresponds closely to TPBs perceived behavioural control. He also found that the influence of demographic variables, general attitudes, and 'domain attitudes' (corresponding to TPBs 'attitude toward the behaviour') was mediated by entrepreneurial conviction.

Davidsson tested his model with a random sample of 1313 Swedes between the ages of 35 and 40. The demographic variables, attitude toward the behaviour, and general attitudes explained approximately 35% of the variance in perceived behavioural control (or entrepreneurial conviction). The adjusted R square for the full model on intent was approximately 0.5.

Reitan (1996) combined two Ajzen's and Shapero's models. The model was tested on a rather large sample of randomly selected Norwegians. Reitan used three different measures for intentions: short-term intentions were measured by a willingness to start a new firm within two years. Long-term intentions were defined as willingness at 'some point of time' to start a new firm. Reitan found evidence suggesting that situational variables exercise more influence on short-term intentions than on long-term intentions.

Kolvereid (1997) used the theory of planned behaviour to predict employment status choice. He focused on the choice between becoming a salaried employee against that of becoming self-employed. In addition to using constructs derived from the theory of planned behaviour, he looked at the influence of demographic variables, such as family background, gender and previous self-employment experience. Using a sample of 143 Norwegians he was able to demonstrate that perceived behavioural control, subjective norm, and attitude toward the behaviour all emerged as more significant influences on self-employment intentions than did self-employment experience, gender, or family background.

There are more studies on the determinants of entrepreneurial intent than on the link between intent and action. Katz (1988, 1990) followed up a sample of individuals, whose self-employment aspirations had been surveyed in 1968. Katz found that expressed intent for self-employment was followed up in 30% of the cases during the subsequent four-year period (10 out of 33). On the macro level, Katz found intention to be a poor predictor, however: of the remaining 2218 people in the sample, 195 (8.7%) entered self-employment at some point. This suggests a high influence of situational factors, a point also emphasized by Reynolds (1995).

4. Model and Hypotheses

The present study builds on previous intent studies, and aims to take them one step further toward servicing policy design purposes. Our intent is to develop and test a

model that incorporates situational variables, reflected in perceived social norm, that can be manipulated through policy intervention. Apart from friends and family, social norm is reflected in the institutional environment in which the individual operates. One example of such a setting is provided by the study environment of the student. University is an institution through which students pass on their way toward working life. University students will be making career decisions imminently after, and often before, graduation. It is also our impression that the career preferences of university students can be influenced, and that university students tend to gravitate toward fashionable career options. Finally, it has been shown that career aspirations among adolescents are significantly predictive of eventual career choice (Trice, 1991).

Davidsson (1995) found that the perceived behavioural control (Davidsson's 'entrepreneurial conviction') is the most important single influence on intent, and that the influence of social norm and attitude toward the behaviour tends to be mediated through PBC. This finding seems understandable even in the light of the theory of planned behaviour. The decision to start up a new firm has much more important consequences for the individual than have those behaviours that have typically been studied using the TPB as the main explanatory framework (see Ajzen, 1991). The decision to start up a new firm has much more important consequences than, say, the decision to vote, to give up smoking, to plan leisure activity, or to lose weight. In addition, the volitional control of the individual is considerably smaller over the action of launching a new firm than, say, voting in an election. Thus, it can be expected that the role of perceived behavioural control is relatively more important for the decision to start a new firm than it is for, say, the decision to vote. Hence, and referring to Ajzen's theory of planned behaviour, the following hypotheses are stated:

H1: Subjective norm is positively related to entrepreneurial intent
H2: Attitude toward entrepreneurship as a career option is positively related to entrepreneurial intent
H3: Perceived control over the decision and process to start up a new firm is positively related to entrepreneurial intent
H4: Perceived behavioural control exercises the strongest influence on entrepreneurial intent

5. Operationalization of Constructs

5.1. Perceived Behavioural Control

The perceived behavioural control is operationalized following Davidsson (1995), who obtained a Cronbach alpha of 0.82 for his construct. The construct statements used in the present study are listed in Appendix 1. The Cronbach Alpha for this construct was 0.75 for the combined sample ($n = 3047$). The construct was calculated as the mean of individual statement scores. The value of this construct ranges from 1 (small) to 5 (strong).

5.2. Social Norm

Following the aims of this study, the perceived social norm was defined to reflect the study environment of the student. Construct statements were designed to reflect the

degree to which the individual perceived the university environment to encourage entrepreneurship, and the degree to which entrepreneurship was perceived as an acceptable career alternative after graduation. The construct statements of this construct are listed in Appendix 1. The variable was calculated as the mean of four construct statements ($n = 3116$; Cronbach Alpha = 0.70, range from 1 (low) to 5 (high)).

5.3. Attitude toward Entrepreneurship

The study attempted to borrow the attitude statements from Davidsson (1995), but the statements did not load on the same factor. Therefore, a single-statement construct that measured the essence of attitude, namely, the perceived attractiveness of entrepreneurship as a career alternative had to be used, see Appendix 1. Although forced to use a single-statement, and consequently less reliable construct, this does not necessarily undermine the analysis. Nunnally (1978, pp. 219–220) points out that the problem with unreliability is that it causes random error, so that 'true' correlations are masked (type II error). This implies that if correlations are found, the reliability problem is not important (see also Schmidt and Hunter, 1977). Finally, most psychometric literature points out that reliability is a prerequisite for validity. Thus, if validity can be demonstrated, this implies sufficient reliability.

Table 2 shows strong and expected correlations for this variable, that are consistent both for the combined database and for the country-specific analyses. As expected, this variable is also strongly positively correlated with perceived behavioural control, suggesting criterion and construct validity. Table 2 also shows that while there is no correlation between this variable and age (suggesting that this attitude does not change with age), there is a significant, expected positive correlation between perceived behaviour control and age, suggesting discriminant validity for these variables. These observations increase our confidence that the reliability of this variable is sufficient for the purposes of our analysis.

5.4. Entrepreneurial Intent

The ultimate dependent variable in the model, entrepreneurial intent, has been measured in different ways in different studies. Krueger (1993) used a dichotomous variable, with a yes/no statement: 'Do you think you'll ever start a business?' This is a fairly loose operationalization. Davidsson (1995) used a different approach, basing the operationalization of intent on an index of three questions: (1) 'Have you ever considered founding your own firm?'; and (2–3) 'How likely do you consider it to be that within one (or five) years from now you'll be running your own firm?' Also Reitan (1996) adopted a similar approach, using an index measure of intent based on short and long term intentions as well as on the tradeoff between running one's own firm, as opposed to being employed by someone.

In this study, statements were used assessing the perceived likelihood of the individual to start a new firm, either on part-time or on full-time basis, within one or five years from the time when the survey was carried out. The construct was thus based on four statements, as indicated in Appendix 1. The Cronbach Alpha for this construct was 0.82 ($n = 3130$, standardized scores used).

5.5. Additional Variables

In the full model, the influence of some situational and demographic variables on entrepreneurial intent were also examined. Work experience in small firms (those with less than 50 employees) was measured as the number of years that the individual had worked in a small firm. Employment status was coded as 1 (not employed at present), 2 (part-time employment) and 3 (full-time employment). Anticipated change in employment status was estimated as the perceived likelihood of finding a new job within one year from now, using a Likert scale from 1 (small) to 5 (high). The influence of the age of the respondent was examined, and a positive correlation between age and intent was expected to be seen, because of the increasing imminence of graduation.

6. Empirical Study

6.1. Samples

The data analysed in the present study was compiled in Finland, Sweden, and USA. The respective universities are Helsinki University of Technology in Finland, Linköping University in Sweden, the University of Colorado in USA, and Stanford University in the USA. The combined sample size was 3445 university students. The students were mostly students of technology. The respondents were chosen randomly from the general student population.

The students were mailed or interviewed with a four page questionnaire. The questionnaire was first designed in English and then translated to local language if other than English. The response rates varied from 24%–53% in the surveys.

The basic statistics of the empirical sample are shown in Table 1. Although the sub-samples were designed to be as similar as possible, some differences remain. The ages of the respondents varied slightly. The Colorado respondents were oldest, with a mean age of 29 years. The Swedish sample was considerably younger, with a median age of 22 years. The older respondents were more likely to be married, have children, be graduate students instead of undergraduates, and they had more work experience.

The employment situation of the respondents at the time of the study varied as well. Of the young Swedes, only 20% were working either part-time or full-time. In Finland, 56% of the respondents said they were working either full time or part time, whereas in the Colorado sample, the figure was 82%.

The career preferences were to some degree quite similar in the different databases, in that civil servant careers and academic careers were the least favoured in all sub-samples. The two favourite career choices were corporate career and entrepreneurial career. In Sweden, and especially in Finland, the corporate career was the clear favourite. In the US, the preference for the corporate and entrepreneurial careers was equal.

6.2. Testing the Hypotheses

Multiple regression and correlation analysis was applied on testing the hypotheses. First, the influences of social norm and attitude toward entrepreneurship were tested on perceived behavioural control. Second, the influences of the same variables were tested on entrepreneurial intent. Finally, an all variables model was tested which included also situational and demographic variables. The robustness of

Table 1. Basic statistics of the empirical sample[a]

	All	Finland	Sweden	Colorado	Stanford
Intent	0.088	0.029[b]	0.009	0.089	0.134[b]
(mean of standardized scores;	(0.977)	(1.119)	(0.785)	(1.032)	(0.915)
range from $-1.05 \sim 4.74$)	3385	793	362	628	1602
Perceived behavioural control	2.988	2.898	3.008	3.078	2.991
(range from $1 \sim 5$)	(0.782)	(0.826)	(0.698)	(0.765)	(0.783)
	3445	796	395	637	1617
Attitude toward entrepreneurship	3.560	3.415	3.469	3.477	3.686[c]
(range from $1 \sim 5$)	(1.115)	(1.146)	(1.028)	(1.165)	(1.085)
	3406	795	370	635	1606
Subjective norm	2.982	2.604	2.730	2.533	3.400
(range from $1 \sim 5$)	(0.813)	(0.650)	(0.729)	(0.678)	(0.740)
	3393	792	359	631	1611
Small firm work experience	1.434	1.286	0.623	3.146	1.035
(years; firms with < 50 employees)	(3.079)	(3.187)	(1.715)	(4.810)	(1.980)
	3453	796	403	637	1617
Employment status	1.717	1.790	1.248	2.308	1.565
(1 = no job, 2 = part time,	(0.800)	(0.793)	(0.521)	(0.763)	(0.735)
3 = full time)	3436	792	400	636	1608
Change job within one year	2.302	2.258	1.861	2.526	2.318
(perceived likelihood, from $1 \sim 4$)	(1.072)	(1.048)	(1.058)	(1.095)	(1.032)
	2415	720	273	619	803
Age	26.013	26.393	22.265	29.172	25.512
	(6.360)	(7.223)	(3.137)	(8.718)	(4.539)
	3445	796	400	635	1614

[a] Means, standard deviations (in parentheses), and sample sizes
[b] The difference between Finland and Stanford samples is statistically significant, with Stanford students indicating higher intent (Tukey HSD, $p < 0.003$)
[c] Stanford students indicate a significantly higher preference for entrepreneurship as career alternative (Tukey HSD, $p \leq 0.004$)

the models was then checked by running the same analyses for the different country databases. The results are shown in Tables 2, 3, and 4.

Table 2 shows correlations between dependent and independent variables. Note that because of the large sample size, even fairly weak correlations are indicated statistical significance (2-tailed significance). As expected, attitude toward entrepreneurship, subjective norm and perceived behavioural control are strongly positively correlated. A particularly strong correlation is observed between attitude toward entrepreneurship and perceived behavioural control.

Because of the significant correlations between most variables, the different variables are entered stepwise to regression models to control potential instability caused by multicollinearity. The stepwise models are shown in Table 3.

The regression analyses generally support Hypotheses 1, 2, 3, and 4. Perceived behavioural control, attitude toward entrepreneurship, and subjective norm emerge as influences on entrepreneurial intent. The strongest influence is indicated for perceived behavioural control, consistent with Hypothesis 4. Even in the full model, attitude toward entrepreneurship and perceived behavioural control emerge as clearly the most important influences on intent. While reasonable influence is

Table 2. Correlations of dependent and independent variables[a]

	1	2	3	4	5	6	7	8
1 Attitude toward entrepreneurship	1.000							
2 Subjective norm	0.222**	1.000						
3 Perceived behavioural control	0.603**	0.212**	1.000					
4 Intent	0.469**	0.158**	0.513**	1.000				
5 Work experience in small firms	0.058**	−0.063**	0.136**	0.165**	1.000			
6 Employment status	0.018	−0.117**	0.058**	0.076**	0.166**	1.000		
7 Change job within one year	0.090**	−0.020	0.084**	0.128**	0.064**	0.042*	1.000	
8 Age	0.001	−0.057**	0.073**	0.166**	0.331**	0.252**	−0.029	1.000

[a] Pearson correlation coefficients are shown, 2-tailed significance.

Table 3. Regression models for the combined database[a]

	PBC	PBC	PBC	Intent	Intent	Intent	Intent	Intent
Attitude toward entrepreneurship	0.603***		0.586***		0.469***		0.246***	0.247***
Subjective norm		0.212***	0.081***			0.158***	0.028*	0.038*
Perceived behavioural control (PBC)				0.513***			0.359***	0.325***
Work experience in small firms								0.066***
Employment status								0.008
Change job within one year								0.076***
Age								0.116***
Adjusted R^2	0.363***	0.045***	0.371***	0.263***	0.220***	0.025***	0.303***	0.318***

[a] Standardized beta coefficients are shown, 1-tailed significance.

indicated for subjective norm on perceived behavioural control, the regressions in the table indicate only a fairly weak positive relationship between subjective norm and intent, providing weak support for Hypothesis 1. It is also noteworthy that only weak or insignificant influences are indicated for situational and demographic variables, such as work experience in small firms, employment status, and the anticipated change in employment. In the full model, only age is indicated a moderately strong beta coefficient, consistent with increasingly imminent graduation.

The power of the model is consistent with previous research. Krueger (1993) established a *R* square of 0.543 for his full model. Davidsson (1995) established a *R* square of 0.32 for his base model, when one year intentions were used as a dependent variable. Reitan established an explanatory power of 0.30 for his all variables model when two year intentions were used as a dependent variable.

6.3. Robustness of the Model

The robustness of the models was checked by running the same analyses for each country sample. Table 4 shows the resulting models for different country samples.

The robustness checks in Table 4 uniformly confirm the main findings. The *R* square for the model with 'perceived behavioural control as dependent variable' ranges from 0.214 (Sweden) to 0.427 (Finland). Similarly, the R square for the model with 'intent as dependent' ranges from 0.214 (Sweden) to 0.353 (Stanford). The country differences are surprisingly small in different analyses, suggesting good

Table 4. Regression models for country samples[a]

	PBC	PBC	PBC	Intent	Intent	Intent	Intent	Intent
Attitude								
Finland	0.637***		0.614***		0.433***		0.155***	0.203***
Sweden	0.434***		0.407***		0.362***		0.205***	0.172**
Colorado	0.634***		0.632***		0.452***		0.279***	0.273***
Stanford	0.610***		0.581***		0.518***		0.284***	0.265***
Subjective norm								
Finland		0.254***	0.141***			0.139***	−0.001	0.004
Sweden		0.241***	0.189***			0.129**	0.013	−0.030
Colorado		0.156***	0.148***			0.025	−0.022	−0.018
Stanford		0.269***	0.100***			0.231***	0.054**	0.048′
Perceived behavioural control (PBC)								
Finland				0.536***			0.439***	0.355***
Sweden				0.441***			0.338***	0.366***
Colorado				0.445***			0.270***	0.248***
Stanford				0.544***			0.357***	0.346***
Work experience in small firms								
Finland								0.131***
Sweden								0.101*
Colorado								0.057′
Stanford								0.012
Employment status								
Finland								0.090**
Sweden								0.093′
Colorado								−0.042
Stanford								0.045′
Change job within one year								
Finland								−0.009
Sweden								0.147**
Colorado								0.134***
Stanford								0.131***
Age								
Finland								0.144***
Sweden								−0.030
Colorado								0.131***
Stanford								0.090**
Adjusted R square								
Finland	0.405***	0.063***	0.427***	0.287***	0.187***	0.018***	0.301***	0.365***
Sweden	0.186***	0.056***	0.214***	0.192***	0.129***	0.014**	0.214***	0.271***
Colorado	0.401***	0.023***	0.422***	0.197***	0.203***	−0.001	0.241***	0.277***
Stanford	0.372***	0.072***	0.381***	0.295***	0.268***	0.053***	0.353***	0.351***

[a] Standardized beta coefficients are shown

general applicability of the theory of planned behaviour in explaining entrepreneurial intent.

6.4. *Validating the Findings*

In the analysis above, two potential weaknesses can be pointed out. One concerns the use of a single-item variable to measure attitude toward entrepreneurial behav-

Table 5. Correlations of dependent and independent variables in the LBS sample[a]

	1	2	3	4
1 Attitude toward entrepreneurship	1.000			
2 Subjective norm	0.550**	1.000		
3 Perceived behavioural control	0.445**	0.294**	1.000	
4 Intent	0.396**	0.127	0.432**	1.000

[a] Pearson correlation coefficients are shown, 2-tailed significance; $n = 97$.

Table 6. Regression models for the LBS data ($n = 97$)[a]

	PBC	PBC	Intent	Intent	Intent
Attitude toward entrepreneurship	0.445***			0.396***	
Subjective norm		0.294**			0.127
Perceived behavioural control (PBC)			0.432***		
Adjusted R^2	0.190***	0.077**	0.178***	0.148***	0.006

[a] Standardized beta coefficients are shown, 1-tailed significance.

iour. The other concern the measurement of subjective norm, as reflected in the university environment. To further test the robustness of our findings, 500 MBA students of the London Business School were surveyed, using improved scales for both attitude toward entrepreneurship and subjective norm. The scales are listed in Appendix 2. To measure attitude toward entrepreneurship, the rating of entrepreneurship as a career option was complimented with two statements: (1) 'If my child decided to become an entrepreneur, I myself would consider it to be ... 'Bad (−3) ... Good (+3); and: (2) 'I personally consider entrepreneurship to be a highly desirable career alternative for people with my professional and educational background ... ' Do not agree (1) ... Agree (7). The alpha for this scale was 0.76 when standardized scores were used. The subjective norm was measured as a four-item scale, with the statements: 'If I became an entrepreneur, my family (or close friends; colleagues; other people close to me) would consider it to be ... 'Bad (−3) ... Good (+3). The alpha for this scale was 0.80. Perceived behavioural control and entrepreneurial intent were measured similarly as in the other surveys, with alphas of 0.75 and 0.81, respectively.

In the London Business School survey, we 97 usable replies were received, giving us a response rate of 19.4%. The correlation matrix for the LBS sample is shown in Table 5.

From Table 5 it can be observed that most correlations between independent variables are significant and similar to those in the combined database. Note that even though attitude and subjective norm are strongly correlated, these constructs correlate differently with intent, suggesting discriminant validity.

Because of the strong correlations between independent variables, only bivariate correlations are shown, noting only that various regression models using the LBS data behave similarly to the combined database. Note that again, perceived behavioural control emerges as the most important influence on entrepreneurial

intent. Attitude toward entrepreneurship emerges as the second most important influence. Note that the influence of subjective norm on entrepreneurial intent is not significant in the LBS sample. Thus, the LBS data provides support for all other hypotheses except for hypothesis H1 (subjective norm and entrepreneurial intent).

7. Discussion

The analysis of the present study confirms many previous findings in the literature. The findings provide support for the usability of the process approach to analysing entrepreneurial behaviour. So far, the tests of the process approach have been limited to samples collected in homogenous cultural environment. Our study contributes to this literature by demonstrating the robustness of the intent approach in different cultural environments. The robustness checks using different country samples provide remarkable uniformity in the country samples, considering that the samples have been compiled in highly diverse cultural environments. Apart from that concerning subjective norm, hypotheses receive support in the combined database as well as in country-specific analyses. The LBS sample shows that the same relationships can be demonstrated even using modified, more reliable scales.

Our data indicates only weak influence of subjective norm, as reflected in the perceived general acceptability of entrepreneurship as career choice, on entrepreneurial intent. In the LBS sample, where the opinions of friends and family were included in the operationalization of this construct, no significant influence was observed for this construct. These findings suggest that the theory of planned behaviour may have relatively little additional explanatory power, as compared with the expectancy theory. Comparing these two theories, it is noted that perceived behavioural control and attitude toward entrepreneurship are close to perceived feasibility and perceived desirability, which are central constructs in the expectancy theory.

So far, the research on entrepreneurial intent has, by necessity, had to assume that intentions predict entrepreneurial behaviour. Actual data to confirm this assumption remains scarce, however. There is plenty of evidence emphasizing the importance of situational contingencies on entrepreneurial behaviour. Future studies should strive to build on previous intent surveys to check, to what extent entrepreneurial intent is followed through. Our intent is to follow up on our database to check the predictive power of the intent measures used in this study.

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Appendix 1: Operationalization of Model Constructs

Perceived behavioural control ($\alpha = 0.75$)

Statement	DISAGREE ←				AGREE →
I am confident that I would succeed if I started my own firm	1	2	3	4	5
It would be easy for me to start my own firm	1	2	3	4	5
To start my own firm would probably be the best way for me to take advantage of my education	1	2	3	4	5
I have the skills and capabilities required to succeed as an entrepreneur	1	2	3	4	5

Subjective norm ($\alpha = 0.70$)

Statement	DISAGREE ←				AGREE →
I know many people in my university who have successfully started up their own firm	1	2	3	4	5
In my university, people are actively encouraged to pursue their own ideas	1	2	3	4	5
In my university, you get to meet lots of people with good ideas for a new firm	1	2	3	4	5
There is a well functioning support infrastructure in place to support the the start-up of new firms	1	2	3	4	5

Attitude toward entrepreneurship (only the statement referring to entrepreneurial career was used)

Career alternative	NOT AT ALL ←				HIGHLY →
Corporate career (working for a large, established, private sector employer)	1	2	3	4	5
Civil servant career (working for a govenment agency or other public agency)	1	2	3	4	5
Entrepreneurial career (starting up and or managing a firm of my own or with family or friends, self-employment)	1	2	3	4	5
Academic career (working at a university or at a research institution)	1	2	3	4	5
Other, what?	1	2	3	4	5

Entrepreneurial intent ($\alpha = 0.82$)

How likely is it that you will start a new firm of your own or with friends? Please assess the option of starting different types of firms using the scale below.

FULL-TIME OCCUPATION IN OWN FIRM	Not at all likely	Not very likely	Likely	Very likely	Already started a firm
Start a firm **on full-time basis** within one year from now	1	2	3	4	5
Start a firm **on full-time basis** within five (5) years	1	2	3	4	5
PART-TIME OCCUPATION IN OWN FIRM					
Start a firm **on part-time basis** within one year from now	1	2	3	4	5
Start a firm **on part-time basis** within five (5) years	1	2	3	4	5

Appendix 2: Modified Scales used in the London Business School Survey

Attitude towards entrepreneurship ($\alpha = 0.76$)

Career alternative (only the statement relating to entrepreneurial career was used)	NOT AT ALL DESIRABLE						HIGHLY DESIRABLE
Corporate career (working for a large, established, private sector employer)	−3	−2	−1	0	1	2	3
Civil service career (working for a government agency or other public sector agency)	−3	−2	−1	0	1	2	3
Entrepreneurial career (starting up and managing your own firm)	−3	−2	−1	0	1	2	3
Academic career (working at a university or at a research institution)	−3	−2	−1	0	1	2	3

Statement	BAD						GOOD
If my child decided to become an entrepreneur, I myself would consider it to be ...	−3	−2	−1	0	1	2	3

Statement	DO NOT AGREE ←						AGREE →
I personally consider entrepreneurship to be a highly desirable career alternative for people with my professional and educational background	1	2	3	4	5	6	7

Subjective norm (α= 0.80)

Statement	BAD						GOOD
If I became an entrepreneur, my family would consider it to be ...	−3	−2	−1	0	1	2	3
If I became an entrepreneur, my close friends would consider it to be ...	−3	−2	−1	0	1	2	3
If I became an entrepreneur, my colleagues would consider it to be ...	−3	−2	−1	0	1	2	3
If I became an entrepreneur, other people close to me would consider it to be ...	−3	−2	−1	0	1	2	3