



Evaluating Introductory Lectures in Entrepreneurship: Empirical Implications Based on the Theory of Planned Behaviour

Silke Tegtmeier

Leuphana Universität Lüneburg, Germany

Abstract. Based on Ajzen's Theory of Planned Behaviour, this paper evaluates an introductory class on entrepreneurship in terms of its impact on students' entrepreneurial intentions. Results of an empirical study with 73 students reveal that there are negative effects on intention and its antecedents. In general, the introductory class increased awareness of the potentially negative consequences of venture creation. Although participation in the course broadened their entrepreneurial skills and knowledge, students recognized they had still shortcomings regarding the requirements of managing a start-up. Moreover, the introductory class sensitized students to the career option of entrepreneurship and made them aware of the complexity of venture creation. If the course aims to encourage not simply entrepreneurship but successful entrepreneurship, results seem to be encouraging. This is because students understood that being an entrepreneur entails hard work and requires considerable knowledge and skills. The paper also discusses further implications for entrepreneurship education.

Keywords: entrepreneurship education, entrepreneurial intentions, Theory of Planned Behaviour, cognition.

1. Introduction

As a reaction to the positive social and economic effects of entrepreneurship, many universities have established departments in this field to enhance students' entrepreneurial thinking and behaviour. In this context, it is a crucial task to develop students' awareness of what entrepreneurship is about. Overall, there is a need to introduce entrepreneurship curricula to every study course to improve an entrepreneurial culture in society. Hence, entrepreneurship research needs to evaluate academic pedagogical tools and curricula in terms of their impact on students' entrepreneurial intentions (Fayolle, 2005; Souitaris et al., 2007; Haase and Lautenschläger, 2009). This will support policy makers and educators in establishing and conceptualizing the appropriate programmes and tools to reach this goal (Koch, 2003; Lourenco and Jones, 2006; Pittaway and Cope, 2007).

Drawing on the Shapero-Krueger Model of the Entrepreneurial Event, Audet (2004) analyzes the impact of two different courses on entrepreneurial intentions:

a business-planning course and a field study seminar on a small business (for the model see Krueger et al., 2000; Shapero and Sokol, 1982). She finds a decrease in intention in both cases (see more detailed in the discussion). Cooper and Lucas (2007) refer to this model as well as to Ajzen's Theory of Planned Behaviour, a comprehensively tested cognitive theory (henceforward cited as TPB; Ajzen, 1991, 2005; for overlapping components of the two models see Brännback et al., 2006; Krueger et al., 2000). The authors concentrate on two entrepreneurship programmes: Enterprisers, a one-week residential program for entrepreneurship students, and Encouraging Dynamic Global Entrepreneurs (EDGE), an eight-week programme focused on developing entrepreneurial skills for senior high school pupils and undergraduate students. Their work indicates a positive impact of the programmes on self-efficacy and desirability of entrepreneurial careers. Here, the importance of authentic experience is highlighted.

Also based on TPB, Souitaris et al. (2007) test the effects of entrepreneurship programmes on entrepreneurial attitudes and intentions of science and engineering students. Results reveal that not only some attitudes, but also the overall entrepreneurial intention can be raised. The programmes showed to be most influential in terms of providing inspiration. In contrast to these studies, this paper focuses on an introductory class on entrepreneurship that has been analyzed against the background of TPB.

Cognitive psychology has proved to be a fruitful line concerning the study of entrepreneurship (Forbes, 1999; Mitchell et al., 2002; Baron, 1997, 2004, 2007; for a review of cognitive approaches in entrepreneurship research see Wadeson, 2006). In particular, there is an ongoing debate about entrepreneurial career choice based on cognitive approaches (Kolvereid, 1996; Baron, 1997; Krueger et al., 2000; Simon et al., 2000; Carter et al., 2003; Lee et al., 2011). As one important line of cognitive approaches, intention-based models are widely used for explaining entrepreneurial intentions (Ajzen, 1991; Krueger and Carsrud, 1993; Krueger et al., 2000; Zellweger et al., 2011). Intention needs to be examined as it moderates the relationship between attitude and behaviour. For this purpose, Ajzen's TPB provides a systematic theoretical framework (Ajzen, 1985, 1991). The TPB model, which uses few variables and shows how these factors influence human behaviour, has already been used to explain many different areas of behaviour (apart from entrepreneurial activity) and has often been tested empirically (see e.g. the review by Armitage and Conner, 2001). As such, TPB is the prevailing model for the explanation of behavioural intentions (Krueger and Brazeal, 1994) and can also explain or even promote changes in intentions or behaviour over time (Ajzen, 2005; Hardeman et al., 2002).

Starting a business venture represents a specific, planned behaviour. Thus, the usage of TPB in an entrepreneurial context is appropriate. And indeed, TPB has been part of entrepreneurship research for approximately a decade. In this time, many studies have confirmed that TPB is valid for explaining the development of entrepreneurial intentions and behaviour (Kolvereid, 1996; Fayolle, 2000;

Krueger et al., 2000; Autio et al., 2001; Kolveried et al., 2007; Van Gelderen et al., 2008; Liñán, 2008; Liñán & Chen, 2009; Engle et al., 2010; Zellweger et al., 2011; Moriano et al., 2012). For a deeper understanding, these studies need to be contrasted with work that builds on other models and concepts to explain entrepreneurial intentions. In particular, the Shapero-Krueger model of the entrepreneurial event, the model of implementing entrepreneurial ideas (Bird, 1988) and the maximization of the expected utility model (Douglas and Shepherd, 2002) as well as concepts such as autonomy (Van Gelderen and Jansen, 2006), proclivity for improvisation (Hmieleski and Corbett, 2006), role models (Van Auken et al., 2006), and the construct of affect (Baron, 2008) have been applied to predict entrepreneurial intentions. In comparison to these approaches, the TPB explains entrepreneurial intentions most consistently (Iakovleva et al., 2011).

Building on former work, the following study is not a test of TPB's coherences themselves but an analysis of changes in TPB related factors during a specific study course. In doing so, the paper contributes to entrepreneurship research by evaluating an introductory lecture in entrepreneurship. Thus, it helps to improve tools aimed at sensitizing students towards entrepreneurship.

This paper proceeds as follows. First, the study's context is presented, including information on the analyzed introductory course on entrepreneurship. Next, TPB will be outlined as the study's conceptual framework. Based on TPB, hypotheses will be formulated as a next step. Afterwards, the empirical investigation will be highlighted, including research design, information about the sample and results of a pilot study. The last section provides a discussion of results followed by conclusions and implications for future work.

2. Context of the Study – Introductory Course on Entrepreneurship

The present study refers to an introductory class on entrepreneurship at Leuphana University in Germany. Since 2002, the chair for entrepreneurship has been offering lectures in this field of study. Courses include two introductory classes, Entrepreneurship I (internal view) and II (external view). They are the basis for advanced seminars such as business planning, start-up consulting, research projects, case studies and simulation games which have been designed to enhance knowledge about skills required for entrepreneurship.

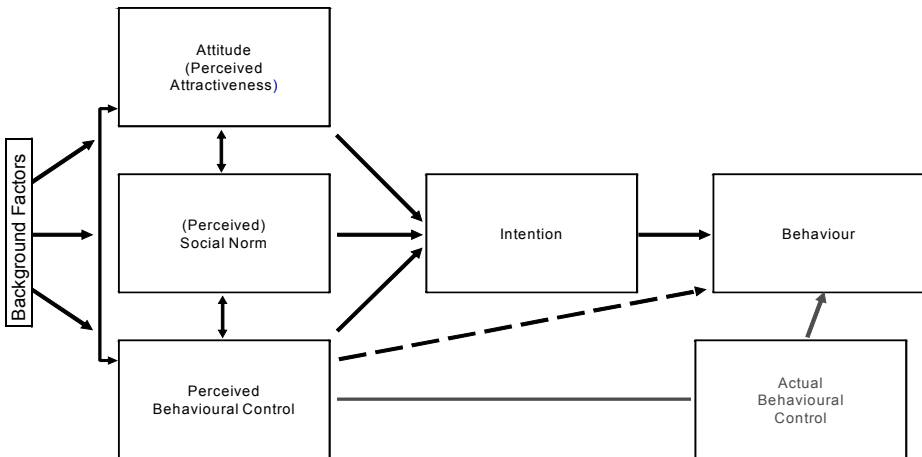
The introductory course I analyzed in this study targets students of business administration, economics, social sciences, and cultural sciences during their advanced studies. The course deals with entrepreneurial basics, founding theories and processes, start-up financing and related risk analysis, corporate planning, management of founding projects, market entry and early stage strategies as well as tax and legal aspects of corporate founding.

The course consists of 14 90-minute classes which take place during summer term. In addition to lecture-style presentations, the course includes a 90-minute guest lecture delivered by a start-up consultant who has written a start-up guidebook. Moreover, students are supposed to supplement their knowledge by reading reference books and articles. The course is combined with an exercise course held every second week and concludes with a 60-minute written examination. The research questionnaire was fielded at the beginning and end of the introductory course.

3. Theory of Planned Behaviour and Hypotheses

TPB. Figure 1 presents a schematic illustration of TPB (Ajzen, 2005; Krueger and Carsrud, 1993). According to TPB, behaviour can be explained as a result of intention. Intention is influenced by three global constructs: attitude (perceived attractiveness of the target behaviour), perceived social norm (social pressure in favour of or against the target behaviour) and perceived behavioural control (the actor's perceived ability to perform the behaviour in question).

Figure 1: The Theory of Planned Behaviour with Direct Measurement of Predictor Variables (adapted from Ajzen, 2005 and Krueger and Carsrud, 1993)



People intend to perform a specific behaviour (here: an entrepreneurial activity) if their personal assessment of the questioned behaviour is positive, if they think their important referents agree with it and if they assume that the required resources and opportunities are available. If perceived behavioural control and actual control over behaviour are identical, intention should be the behaviour's immediate antecedent. Here, actual control means that "one

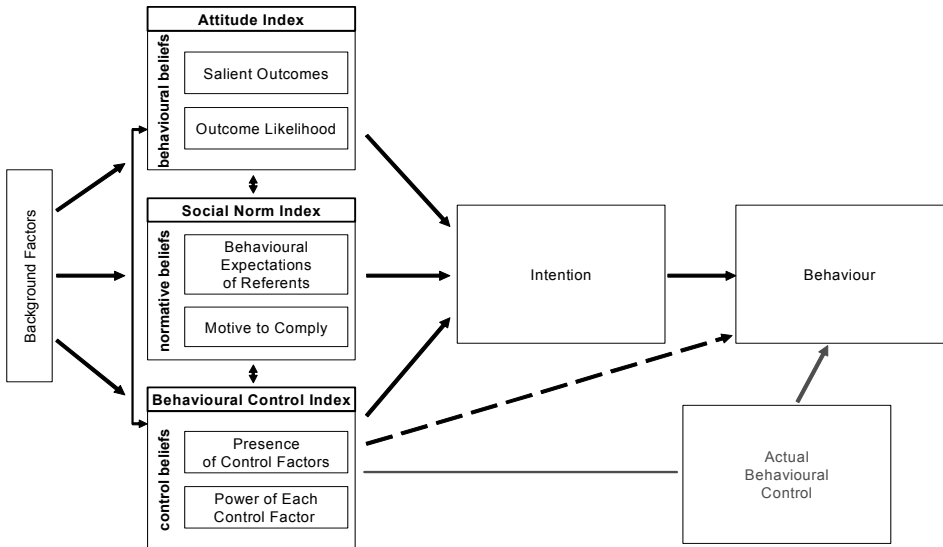
[actually] has the necessary skills and abilities required to perform the behaviour, and [that] there are no environmental constraints preventing behavioural performance” (Fishbein, 2000: 275). In contrast to that, perceived behavioural control has often been equated with self-efficacy in the context of entrepreneurial intentions (Cooper and Lucas, 2006; Cox et al., 2002; for the role of skills in developing entrepreneurial intentions see Liñán, 2008). Overall, it has to be kept in mind that intention can be changed by new information that prevents performance of the behaviour (Ajzen, 1985).

On the one hand, the influencing constructs of attitude, social norm and perceived behavioural control can be measured directly via semantic differential scales (Osgood et al., 1957) that use bipolar adjective pairs at opposite ends of a dimension (e. g., good – bad). In this context, *direct measurement* means participants state if their attitude towards a behaviour is a generally positive or negative one (overall evaluation). On the other hand, attitude, social norm and perceived behavioural control can be indirectly explained through beliefs which are based on information and experience (belief index). For example, attitude towards a certain behaviour is assumed to be defined by beliefs concerning that specific behaviour. Here, *indirect measurement* refers to people specifying singular beliefs instead of a composite evaluation. A positive or negative attitude results from a combination of these beliefs. In the sense of an expectancy value model, belief is defined as the subjective probability that a specific behaviour is related to a certain consequence (Fishbein and Ajzen, 1975). Figure 2 shows TPB with a belief-based (and, therefore, indirect) measurement of the influencing constructs of behavioural, normative and control beliefs (Ajzen, 2005; Krueger and Carsrud, 1993).

From the belief-based measurement, the three indices of attitude, social norm and perceived behavioural control can be derived. This study has been carried out with direct as well as with indirect (index-based) measurement.

Only those central beliefs that are readily accessible in memory are assumed to play a decisive role in the intention to perform a behaviour (here: an entrepreneurial activity). Here, behavioural beliefs as determinants of attitude consist of expected consequences of behaviour (probability of occurrence) and evaluations of these consequences (desirability). For instance, someone might assume job-related independence to be a probable consequence of entrepreneurial activity and evaluates job-related independence positively. In contrast to that, normative beliefs act as determinants of social norm. Normative beliefs show whether a person expects his or her important referents to approve of the behaviour in question, as well as the person’s motive for complying with these referents. For instance, a person might assume his or her partner to be disapproving of an entrepreneurial activity. This person might as well have a high motivation to comply with the referent’s desires.

Figure 2: The Theory of Planned Behaviour with Indirect Measurement of Predictor Variables (adapted from Ajzen, 2005 and Krueger and Carsrud, 1993)



Finally, control beliefs explain perceived behavioural control. They characterize expectations regarding availability and influential strength of factors that either promote or prevent the performance of the behaviour (probability of occurrence) and the perceived power of these factors over the ability to perform the target behaviour (Ajzen, 1985, 1991, 2005). Control factors can be resources such as time, funds or skills. For instance, funds might be assumed to be very beneficial for the performance of the target behaviour but they might not be regarded as sufficiently. The person's perception of this control factor will weigh on the decision to perform the behaviour (here: an entrepreneurial activity). Because beliefs reflect the environmental information being available (whether or not they are correct), information ultimately determines behaviour (Ajzen, 2005).

General attitudes, moral concepts, demographic factors and traits represent background factors within TPB and influence behaviour only indirectly. They affect some of those factors that refer more likely to the behaviour. Their indirect influence is related to beliefs that lead to changes of attitude and so forth. (See details in Ajzen's updated article, 2005; for the case of passion with respect to entrepreneurial intentions, see Brännback et al., 2006). Situational factors such as employment status are assumed to have only an indirect influence on intentions (Krueger and Carsrud, 1993). Intentions are specific to a situation and a context, while background factors are global determinants of a person and a situation. Thus, it is not surprising that background factors influence a specific behaviour only indirectly (Krueger and Carsrud, 1993).

TPB also has implications for behavioural interventions: It provides general guidelines for intervention programmes that can be directed at behavioural, normative or control beliefs as antecedents of intentions. Such behaviour-change programmes work through persuasion, information, increasing skills, goal setting and rehearsal of skills (Hardeman et al., 2002). If the relevant sets of beliefs change, the corresponding overall attitude, social norm or perceived behavioural control should change as well (Ajzen, 2005).

It is reasonable to concretize the target behaviour, as well as all antecedent variables regarding the time aspect. That is because beliefs can vary, depending on the particular time at which the target behaviour takes place. On the one hand, the shorter the period of time between intention and performance of the target behaviour, the more important the beliefs regarding the behaviour's negative aspects (approach-avoidance behaviour; Ajzen, 1985, 2001). Beliefs are of central importance because, based on beliefs, measures are presumed to promote entrepreneurial activity in a reasonable way. Furthermore, answers will be more realistic if the time period between intention and behaviour is short and the target behaviour is concrete. On the other hand, students often start their professional career with an employment to collect useful experiences for an entrepreneurial activity later. Based on these considerations, the target behaviour of this study is "becoming an entrepreneur within five years after completing studies".

Hypotheses. Based on the TPB, the four following hypotheses have been tested:

H1: The course increases participants' perceived behavioural control toward becoming self-employed within five years after completing studies.

Because the course imparts knowledge and skills in the field of entrepreneurship, perceived behavioural control should increase after participants have taken part in the course. However, other aspects of entrepreneurship such as access to seed capital do not change as a result of course engagement.

H2: The course decreases participants' attitude toward becoming self-employed within five years after completing studies.

The students recognize that being an entrepreneur requires a great deal of work and responsibility. Even if their perceived behavioural control should increase after having taken the course, they will also realize there is much to learn to become successful entrepreneurs. These facts might deter a positive attitude.

H3: The course has little impact on the participants' social norm toward becoming self-employed within five years after completing their studies.

The impact of the course depends on important referents. If the professor of the introductory course is regarded as a referent, social norms may be positively impacted. However, because of the high workload and stress associated with entrepreneurship, the partner, other family members and friends may disapprove of entrepreneurial intentions. These perceptions are not expected to change after attending the course.

H4: The course's impact on participants' intentions toward becoming self-employed within five years after completing studies depends on the overall differences in the influencing constructs.

If the increase in perceived behavioural control outweighs the negative effects of attitude, intention should increase and vice versa. Altogether, only a low impact of the introductory course on entrepreneurial intentions is predicted because this study concerns only short-term changes. Courses that are combined with some kind of practical application and offer students the opportunity to take on a more active role, as in the case of business-planning courses, should have a higher impact on entrepreneurial intention.

4. Methodology

Research design and sample. In this application of TPB, entrepreneurial activity is the behaviour under study. According to Shane, "entrepreneurship is an activity that involves the discovery, evaluation and exploitation of opportunities to introduce new goods and services, ways of organizing markets, processes, and raw materials through organizing efforts that previously had not existed" (Shane, 2003: 4). In the context of the present study, an entrepreneurial activity is defined as an "Existenzgründung". This German definition refers to the economic importance of the entrepreneur. It requires him or her to act independently in order to gain a personal economic existence; the venture being its main source of income. However, "Existenzgründung" is not limited to the creation of a new company but it also includes entire or partial buyouts as well as operating participation. In line with that, an entrepreneurial activity refers to starting a self-employed activity for economic reasons.

The sample comprises 73 students with different majors who enrolled in the introductory course on entrepreneurship that represents this study's subject. Data is taken from students' responses to a standardized questionnaire fielded before and after the course took place (t_1 ; t_2). The reasons for the students' entrepreneurial intentions were identified as prospects or forecasts respectively. This is because intentions were associated with conditions at the time they were formed (Krueger and Carsrud, 1993) and because intentions can be transfigured

in a retrospective survey. Students who are not interested in becoming entrepreneurs were also included in the investigation.

Data has been evaluated by means of descriptive statistics. Additionally, mean value comparisons were used to gain information regarding differences in attitudes, social norms, perceived behavioural control and intention between the beginning and end of the semester (Audet, 2004).

Pilot study. Before the standardized TPB questionnaire was constructed, an elicitation study with a comparable student sample was carried out to identify salient perceived consequences, referents and control factors of intention (Ajzen, 2011). The six most frequently named factors in each category were:

- Consequences: job-related independence, personal responsibility, risk of failure, personal development, influence on flexibility and high work load.
- Referent groups: parents, partner, other family members, friends/fellow students, colleagues at work and important professors.
- Control factors: seed capital, start-up knowledge, business idea, economic climate, support of others and practical experience.

Questionnaire. The questionnaire that was fielded at the beginning of the semester (t_1) contained 78 items while the one fielded at the end of the semester (t_2) encompassed 64 items. Thirty and 16 of the items, respectively, concerned demographic factors such as sex, number of semesters attended, academic department and parents' employment. The remaining items concerned the components of TPB as they related to entrepreneurial intentions. The questionnaire was a standard TPB questionnaire (Ajzen, 2011). Adaptations which had to be undertaken will be illustrated in the following section. The predictor variables were measured directly as well as indirectly. Both questionnaires concluded with an identification code so that answers remained anonymous but could be connected to a specific case. Moreover, the second questionnaire included an open-ended question which was not part of the first one, namely: "Has the introductory course in entrepreneurship changed your mind regarding a potential venture creation?" Additional data was collected on how often students took part in class and whether they were usually prepared for class meetings.

Three items asked the participants to indicate whether they intended to become entrepreneurs within five years after finishing their studies. These questions and items relate to the constructs of attitude, social norm and perceived behavioural control concerning entrepreneurial activity within five years after completing studies. They were answered on a 7-point ranking Likert-scale, as

recommended in literature (Francis et al., 2004). An example for such a question is the following: “To start an entrepreneurial activity within five years after studying seems to me: *not attractive at all – very attractive.*”

Consequences, referents and control factors which had been identified in the pilot study were used to measure participants’ beliefs. Concretely, students were asked to rank the subjective probability of each consequence from *very improbable* to *very probable*, and to evaluate these consequences from *extremely negative* to *extremely positive*. Using this procedure, also perception of the referent groups’ approving or disapproving of an entrepreneurial activity within this timeframe was measured. Furthermore, participants assessed their wish to comply with the referents’ desires on a range from *not at all* to *very much*. They also estimated the subjective probability of the control factor as *very improbable* to *very probable*. Finally, the impact on becoming an entrepreneur within five years after completing studies was evaluated in terms of whether it would make the process *much more difficult* or *much easier*.

Hypotheses were tested by using direct measurement of influencing constructs and by applying belief-based indices as an indirect measurement of the influencing constructs.

Methodology of analysis. Belief-based indices of attitude, social norm and perceived behavioural control have been acquired by means of behavioural, normative and control beliefs. For behavioural beliefs, the subjective probabilities of occurrence were coded from 1 to 7 (*improbable – probable*) and evaluations of consequences from -3 to +3 (*bad – good*) (as with the following constructs, Francis et al., 2004). An example of a question would be: “To start an entrepreneurial activity within five years after finishing studies seems to be independent to me: *improbable – probable.*” According to this, the composite index’ valence indicates direction as well as strength of influence. The index is divided by the number of consequences in order to compare absolute values of predictor variables within or across studies. The indices for attitude, social norm, and perceived behavioural control can be compared to each other more easily within a study. In contrast to that, studies using a different number of behavioural consequences can be related in a better way (Francis et al., 2004).

Concerning norms, the belief that referents approve or disapprove of the behaviour in question were coded from -3 to +3 (*rejection – agreement*), and the motive to comply with these referents were ranked from 1 to 7 (*low – high*). Here, participants often chose “referent not existent”, indicating that there is no social pressure of either a positive or a negative social influence. Thus, the composite index refers only to referents where they exist and is divided by the number of those referents.

The participants’ belief in the existence of necessary control factors was coded from 1 to 7 (*not existent – existent*), and their perceived importance for the target behaviour was given a range from -3 to +3 (*difficult – easy*). The result is

divided by the number of control factors for an average, as was done with the behavioural and normative beliefs, too.

5. Results

Descriptive data. Table 1 depicts descriptive data of both, sample and sub-samples. The three sub-samples are based on the participants' knowledge about entrepreneurship before enrolling in the introductory course under study. Sub-sample 1 consists of students who had not taken any other courses in entrepreneurship before but were taking other entrepreneurship-related courses concurrently to the one in question. Sub-sample 2 encompasses those students who had taken courses in entrepreneurship neither before-hand nor parallel to the introductory course. As females have a disproportionately high representation in the whole sample and all sub-samples, sub-sample 3 consists of the female population of sub-sample 2. Thus, sub-samples 2 and 3 overlap.

Table 1 depicts a ratio of 1.67 women for one man in the study. This imbalance is even stronger in both of the mixed sub-samples. The proportion of women in the introductory course far outweighs the proportion of business administration majors in school (1:1.12). However it is far lower than the proportion of cultural sciences majors in the school (1:4.39). The results have to be interpreted in light of this bias.

Students of business administration and cultural sciences were the primary participants in the study. This is not only because of the high population of business students (N=968) and students in cultural sciences (N=1,327) at Leuphana university. Another reason is that business students are more likely to be interested in entrepreneurship than students of other subjects. Additionally, it can be stated that about 40% of the participants have at least one self-employed parent.

Data concerning the intended completion of study courses shows that the sample mainly consists of students who attend main courses. The time period until the performance of the target behaviour differs slightly among participants. This is caused by differences in the intended time until graduation. However, the small number of participants precludes dividing the sample on the basis of graduation year.

Well over half the study's sample (61.6%) claims to have attended class "always", but over half (52.1%) also claims "never" to have prepared for it.

Tables 2-5 provide the mean values (mean), standard deviations (σ), minimum and maximum values (min; max) and the number of valid values (n) of the whole sample and the sub-samples at the beginning (t_1) and at the end of semester (t_2). The values amount to 7 and 21, respectively, for a favorable or high value, and to 1 and -21, respectively, for an unfavorable or low value within the range. The range of values at the beginning of the semester corresponds with the range at the end of the semester.

Table 1: Characterization of the Sample and Sub-samples

Sex:				
Whole Sample:	male: 37.5 %	female: 62.5 %		
Sub-sample 1:	male: 29.8 %	female: 70.2 %		
Sub-sample 2:	male: 28.0 %	female: 72.0 %		
Sub-sample 3:	male: 0 %	female: 100 %		
Study Course:				
Whole Sample:	business administration: 76.5 %	economics & social sciences: 6.2 %	cultural sciences: 21.9 %	(3 cases business administration & cultural sciences)
Sub-sample 1:	business administration: 74.1 %	economics & social sciences: 3.4 %	cultural sciences: 27.6 %	(3 cases business administration & cultural sciences)
Sub-sample 2:	business administration: 74.5 %	economics & social sciences: 2.0 %	cultural sciences: 29.4 %	(3 cases business administration & cultural sciences)
Sub-sample 3:	business administration: 72.2 %	economics & social sciences: 0 %	cultural sciences: 33.3 %	(2 cases business administration & cultural sciences)
Study Period:				
Whole Sample:	advanced studies: 96.3 %	basic studies: 3.7 %		
Sub-sample 1:	advanced studies: 96.6 %	basic studies: 3.4 %		
Sub-sample 2:	advanced studies: 96.1 %	basic studies: 3.9 %		
Sub-sample 3:	advanced studies: 97.2 %	basic studies: 2.8 %		
Parents' Self-employment:				
Whole Sample:	yes: 38.3 %	no: 61.7%		
Sub-sample 1:	yes: 44.8 %	no: 55.2 %		
Sub-sample 2:	yes: 45.1 %	no: 54.9 %		
Sub-sample 3:	yes: 44.4 %	no: 55.6 %		
Estimated Semesters until Graduation:				
Whole Sample:	<= 2 semesters: 34.2 %	> 2 <= 4 sem.: 56.9 %	> 4 <= 6 sem.: 8.8 %	
Sub-sample 1:	<= 2 semesters: 24.6 %	> 2 <= 4 sem.: 63.2 %	> 4 <= 6 sem.: 12.3 %	
Sub-sample 2:	<= 2 semesters: 26.0 %	> 2 <= 4 sem.: 62.0 %	> 4 <= 6 sem.: 12.0 %	
Sub-sample 3:	<= 2 semesters: 25.7 %	> 2 <= 4 sem.: 62.8 %	> 4 <= 6 sem.: 11.5 %	

Annotations: Whole Sample: all cases (n=73); Sub-sample 1: no prior knowledge (introductory course and other parallel courses in entrepreneurship, n=58); Sub-sample 2: no knowledge before or parallel (only the introductory course, n=51); Sub-sample 3: female population of sub-sample 2 (n=36).

Table 2: Descriptive Data - Whole Sample

	Mean t ₁	Mean t ₂	σ t ₁	σ t ₂	Min; Max t ₁	Min; Max t ₂	Possible Range	n t ₁	n t ₂
A_{dir}	4.297	3.950	1.488	1.684	{1.00; 7.00}	{1.00; 7.00}	{1; 7}	73	73
SN_{dir}	3.932	3.874	1.071	1.055	{1.33; 6.67}	{1.00; 6.33}	{1; 7}	73	73
PBC_{dir}	4.438	4.292	1.187	1.262	{1.00; 6.33}	{1.00; 6.67}	{1; 7}	73	73
I	3.037	2.719	1.594	1.476	{1.00; 6.67}	{1.00; 6.33}	{1; 7}	73	73
A Index	5.044	4.894	4.238	5.491	{-9.67; 14.00}	{-10.33; 13.83}	{-21;21}	73	72
SN Index	0.483	-0.383	3.672	2.865	{-7.83; 18.00}	{-10.17; 5.83}	{-21;21}	73	60
PBC Index	9.409	8.217	3.612	4.084	{1.00; 19.00}	{0.50; 17.50}	{-21;21}	73	69

Annotations: Whole Sample: all cases (n=73). The sample size varies as a result of missing data. A_{dir}: attitude measured directly; SN_{dir}: social norm measured directly; PBC_{dir}: perceived behavioural control measured directly; I: intention; A Index: attitude index; SN Index: social norm index; PBC Index: perceived behavioural control index.

Table 3: Descriptive Data – Sub-sample 1

	Mean t ₁	Mean t ₂	σ t ₁	σ t ₂	Min; Max t ₁	Min; Max t ₂	Possible Range	n t ₁	n t ₂
A_{dir}	4.230	3.764	1.469	1.615	{1.00; 7.00}	{1.00; 7.00}	{1; 7}	58	58
SN_{dir}	3.931	3.876	1.106	0.992	{1.33; 6.67}	{1.67; 6.33}	{1; 7}	58	58
PBC_{dir}	4.437	4.253	1.076	1.160	{1.67; 6.33}	{1.33; 6.67}	{1; 7}	58	58
I	2.897	2.474	1.566	1.318	{1.00; 6.67}	{1.00; 6.33}	{1; 7}	58	58
A Index	4.949	4.395	4.036	5.505	{-9.67; 14.00}	{-10.33; 12.83}	{-21;21}	58	57
SN Index	0.700	-0.330	3.831	2.631	{-7.50; 18.00}	{-6.33; 5.83}	{-21;21}	58	48
PBC Index	9.302	7.870	3.455	3.930	{1.00; 17.50}	{0.50; 17.00}	{-21;21}	58	55

Annotations: Sub-sample 1: no prior knowledge (introductory course Entrepreneurship I and other parallel courses in entrepreneurship n=58). The sample size varies as a result of missing data. For abbreviations of the TPB components, see Table 2.

Table 4: Descriptive Data – Sub-sample 2

	Mean t ₁	Mean t ₂	σ t ₁	σ t ₂	Min; Max t ₁	Min; Max t ₂	Possible Range	n t ₁	n t ₂
Adir	4.131	3.719	1.419	1.557	{1.00; 7.00}	{1.00; 7.00}	{1; 7}	51	51
SNdir	3.909	3.853	1.143	0.982	{1.33; 6.67}	{1.67; 6.33}	{1; 7}	51	51
PBCdir	4.444	4.235	1.036	1.176	{1.67; 6.33}	{1.33; 6.67}	{1; 7}	51	51
I	2.902	2.382	1.510	1.175	{1; 6.67}	{1.00; 5.00}	{1; 7}	51	51
A Index	5.109	5.010	3.698	4.660	{-4.17; 14.00}	{-8.00; 12.83}	{-21;21}	51	50
SN Index	0.808	-0.461	3.993	2.534	{-7.5; 18.00}	{-6.33; 5.83}	{-21;21}	51	43
PBC Index	9.183	7.521	3.213	3.463	{1.00;15.50}	{0.50; 16.50}	{-21;21}	51	48

Annotations: Sub-sample 2: no knowledge before or parallel (only the introductory course, n=51). The sample size varies as a result of missing data. For abbreviations of the TPB components, see Table 2.

Table 5: Descriptive Data – Sub-sample 3

	Mean t_1	Mean t_2	σ t_1	σ t_2	Min; Max t_1	Min; Max t_2	Possible Range	n t_1	n t_2
A_{dir}	4.000	3.537	1.480	1.489	{1.00; 7.00}	{1.00; 7.00}	{1; 7}	36	36
SN_{dir}	3.917	3.806	1.271	1.034	{1.33; 6.67}	{1.67; 6.33}	{1; 7}	36	36
PBC_{dir}	4.269	4.009	1.038	1.191	{1.67; 6.33}	{1.33; 6.33}	{1; 7}	36	36
I	2.722	2.259	1.440	1.099	{1.00; 6.00}	{1.00; 4.67}	{1; 7}	36	36
A Index	5.043	5.267	3.464	4.298	{-2.67; 14.00}	{-8.00; 12.83}	{-21;21}	36	35
SN Index	0.758	-0.594	4.342	2.658	{-7.50; 18.00}	{-6.33; 5.83}	{-21;21}	36	32
PBC Index	8.991	7.252	3.283	3.508	{1.00; 15.50}	{0.50; 16.50}	{-21;21}	36	35

Annotations: Sub-sample 3: female population of sub-sample 2 (n=36). The sample size varies as a result of missing data. For abbreviations of the TPB components, see Table 2.

With respect to the whole sample and all sub-samples, mean values for attitude, social norm and perceived behavioural control at direct measurement are located relatively close to the centre of the values' range. Thus, the lowest mean values apply for social norm and the highest for perceived behavioural control. The index-based (indirect) measurement mean values of attitude are slightly positive, whereas the mean values of social norm are close to the centre of the values' range. With index-based measurement, the mean values for perceived behavioural control are considerably more positive than the ones of attitude and social norm. As becoming an entrepreneur requires special knowledge, lower mean values have generally been assumed. Clearly, students are confident in their ability to gain the knowledge they need to become entrepreneurs. Mean values for the intention to start a business are lower than confidence-related values in the whole sample as well as in all sub-samples, the lowest values being in the female group in sub-sample three.

Table 6: Pearson Correlations between Direct and Indirect Measurement of the Influencing Constructs

Correlations between:	Whole Sample		Sub-sample 1		Sub-sample 2		Sub-sample 3	
	t_1	t_2	t_1	t_2	t_1	t_2	t_1	t_2
A_{dir}-A_{index}	0.375***	0.409***	0.236	0.336*	0.337*	0.337*	0.455**	0.405*
SN_{dir}-SN_{index}	0.599***	0.676***	0.588***	0.586***	0.621***	0.645***	0.675***	0.646***
PBC_{dir}- PBC_{index}	0.382***	0.289*	0.491***	0.272*	0.458***	0.278	0.460**	0.341*

Annotations: *** $p <= 0.001$, ** $p <= 0.01$, * $p <= 0.05$. Whole Sample: all cases (n=73); Sub-sample 1: no prior knowledge (introductory course and other parallel courses in entrepreneurship, n=58); Sub-sample 2: no knowledge before or parallel (only the introductory course, n=51); Sub-sample 3: female population of sub-sample 2 (n=36). For abbreviations of the TPB components, see Table 2.

Pearson correlations. Table 6 reports the Pearson correlations for direct and indirect measurements of the three constructs of attitude, social norm and perceived behavioural control. They are shown for the whole sample, all sub-samples and for both times the questionnaire was fielded. The correlations between direct and index-based measurements of the influencing constructs are statistically significant in most cases. However, the expected difference is not apparent in the constructs of attitude and perceived behavioural control. Results of other investigations concerning TPB have led to expectations of average correlations around 0.50 (Armitage and Conner, 2001). Such a variation could have occurred because items of direct measurement tend to be global evaluations. In contrast to that, better-considered answers are expected from indices based on single beliefs. According to Ajzen’s idea of a psychological relationship between these two cognitive levels, correlations of a moderate magnitude should be expected (Ajzen, 1991). Since the scales in this study are designed very close to Ajzen’s ideas of compatibility (Ajzen, 2005), the results raise questions with respect to the expectancy-value model. Although, admittedly, this model has often been proved empirically (Ajzen, 2005). The following results regarding mean value comparisons vary between global and index-based measurements in view of these rather low correlations.

Mean value comparisons. T-tests with paired samples were carried out to compare the mean values before (t_1) and after (t_2) the introductory course (see also Audet, 2004; Cooper and Lucas, 2007). Table 7 lists the differences in mean values of intention and all its TPB determinants (global or direct - **A_{dir}**, **SN_{dir}**, **PBC_{dir}** - and index-based or belief-based measurement - **A Index**; **SN Index**, **PBC Index** - for the whole sample and all sub-samples).

Table 7: Mean Value Differences between t_1 and t_2 –All Sub-samples

	Whole sample		Sub-sample 1		Sub-sample 2		Sub-sample 3	
	mean t_2-t_1	n	mean t_2-t_1	n	mean t_2-t_1	n	mean t_2-t_1	n
A_{dir}	-0.347**	73	-0.466***	58	-0.412***	51	-0.463**	36
SN_{dir}	-0.057	73	-0.546	58	-0.056	51	-0.111	36
PBC_{dir}	-0.146	73	-0.184	58	-0.209	51	-0.259	36
I	-0.317*	73	-0.422**	58	-0.520**	51	-0.463*	36
A Index	-0.223	72	-0.644	57	-0.204	50	+0.075	35
SN Index	-0.725	60	-0.893	48	-1.159*	43	-1.493*	32
PBC Index	-1.114**	69	-1.452**	55	-1.677***	48	-1.795**	35

Annotations: The sample size varies because of missing data. Cases have been excluded test for test. *** $p <= 0.001$, ** $p <= 0.01$, * $p <= 0.05$. Whole Sample: all cases (n=73); Sub-sample 1: no prior knowledge (introductory course and other parallel courses in entrepreneurship, n=58); Sub-sample 2: no knowledge before or parallel (only the introductory course, n=51); Sub-sample 3: female population of sub-sample 2 (n=36). For abbreviations of the TPB components, see Table 2.

The perceived behavioural control index decreases significantly during semester. This holds true for the whole sample and all sub-samples. In other words, the students' perceived behavioural control is lower after the course than before. These results invalidate H1, although the overall measurement of perceived behavioural control does not confirm a significant effect.

The overall measure of attitude decreases significantly for the whole sample and all sub-samples. This means the students' attitude towards a personal start-up was more positive before taking part in the course than afterwards, confirming H2. However, using the index-based measurement, the effect is not significant.

Only a low impact was expected on social norm (H3). Thus, social pressure from referents was predicted to barely change during course. The results partially confirm this expectation since only index-based measures in sub-samples 2 and 3 show a negative effect on social norm.

In the whole sample and all sub-samples, intention decreases significantly, which confirms H4. In other words, the students' intention to start their own business is lower after the course than before. This is in line with TPB, which states that intention decreases if one or more of its antecedents decrease or if the antecedents' overall decreases outweigh overall increases.

Recapitulating, attitude measured as a global evaluation decreased during the course. Measured by better-considered answers, perceived behavioural control decreased in all sub-samples, and social norm as well as intention decreased in sub-samples 2 and 3. The next section will discuss these results in light of pedagogical aims of the introductory course in entrepreneurship.

Qualitative data. The second questionnaire included the open question: "Has the introductory course in entrepreneurship changed your mind regarding a potential venture creation?" Most students either did not answer the question or answered that there was no change. (Other comments are listed in the appendix.) Most answers confirmed that participants were more aware of negative consequences such as risk and work effort necessary after attending the introductory course. Although their skills and knowledge had broadened, they came to know that they still needed to gain additional knowledge and skills in order to manage a start-up successfully.

6. Discussion

The current paper enhances existing studies in that it does not focus on a specific programme or seminar, but on a large-scale introductory lecture on entrepreneurship. It contributes to entrepreneurship research by presenting results that stimulate the discussion about aims of entrepreneurship tools and programmes and about how to teach entrepreneurship best.

Results show that after attending the course, some participants felt even more confident to start their own business. However, the majority of students showed that a better and more realistic insight into entrepreneurship can serve as an obstacle for becoming an entrepreneur. At first sight, the decrease in the perceived behavioural control index is surprising: The introductory lecture imparts a variety of skills and knowledge necessary for engaging in entrepreneurial activity. By this, the course intends to increase behavioural control. Still, the decrease in perceived control can be explained by the lecture's transportation of a realistic picture of entrepreneurship. This picture includes clarity concerning the wide range of knowledge and skills which is required for a successful entrepreneurial activity. As students become aware of the gap between these requirements and their own state of knowledge and skills, they perceive having lower behavioural control than before. Having learned how many skills are essential can also explain the more negative attitude towards entrepreneurship after having taken part into the course: Knowing more about risks and work load deflates students' attitudes toward entrepreneurship. By this, also their perceptions of social norms and corresponding intentions decrease.

Are these results alarming? The answer to this question depends on the goals such introductory courses on entrepreneurship pursue. If the course's aim is to encourage entrepreneurship, these results can be evaluated as alarming, indeed. However, if the objective is to encourage *successful* entrepreneurship, results seem to be encouraging: Students get aware of the fact that being an entrepreneur entails hard work and requires considerable knowledge and skills.

These results can be compared to Audet's 2004 study of a business-planning course and a field study seminar. Questioning a total of 76 students, Audet found no significant change in desirability, an increase in feasibility and a decrease in intention. Distinguishing between the two pedagogical tools, there were no differences in desirability and feasibility with respect to each course, but intention decreased during both the entrepreneurship course and even more in the business-planning seminar. Audet concluded that these particular pedagogical tools led students to have more realistic perceptions of entrepreneurial careers.

Hence, even the analysis of two pedagogical tools where students could participate more actively (business planning and field study of a small business) showed decreases of intentions (Audet, 2004).

Encouraging entrepreneurial intentions is not the goal of a single pedagogical tool but of the right pedagogical programme. Entrepreneurship is not the right career option for everyone. The hard work required as well as the high level of risk inherent in entrepreneurship may deter some people but encourage others who are motivated by the possibility of high rewards. In addition, although this purpose was not the focus of this study, such introductory lectures may serve as a foundation for students who do not aim to become entrepreneurs but who intend to become consultants, heads of R&D incubators, and on the like. The answers given to the open question confirm that the introductory course sensitized

students to entrepreneurship as a career alternative and made them aware of the complexity of venture creation.

7. Conclusions and Implications

Several implications for entrepreneurship theory and practice can be derived from this study. The issue was to evaluate an introductory course in academic entrepreneurship education. For this purpose, a longitudinal study with a pretest-post-test design has been applied. Among business planning and case studies, for example, lecture-style courses represent a traditional approach in entrepreneurship education. Overall, this pedagogy has shown to be appropriate in order to transfer knowledge. It also creates awareness of an entrepreneurial career, including its potential threats and risks. Compared to simulation-based pedagogy, for example, students have a more or less passive role in the introduction course analysed here. Traditional courses should be embedded into a diversified programme that also includes tools to activate students. Courses seem to be very attractive and stimulating when they offer an inspiring atmosphere, competition among student groups, good interaction between students and teacher as well as an element of fun (Haase and Lautenschläger, 2009). Moreover, programmes should include a high level of inspiration for the students as well as authentic experience, two elements that include the emotional element of forming entrepreneurial intentions (Cooper & Lucas 2007; Souitaris et al. 2007).

Finally, some limitations of this study have to be mentioned. First, it deals with a small sample size in a specific local context. A generalization should be done with caution. Second, comparing intentional variables before and after a one-semester course only allows the measurement of short-term differences. Furthermore, the link between intention and behaviour has not been analysed in this study (due to the time lag issue), but follow-up studies should provide insights into mid-term changes of intentions to explain why people do not become entrepreneurs despite once having such intentions and vice versa. As one of the first studies of an introductory course in entrepreneurship, this work raises several points worth discussing in the field of entrepreneurship education, particularly with respect to the choice of the right tools and programmes to teach entrepreneurship in an appropriate way.

References:

- Ajzen, I. (1985), "From intentions to actions: A Theory of Planned Behaviour", in Julius Kuhl and Jurgen Beckmann (eds), *Action control: From cognition to behaviour*, Berlin/Heidelberg: Springer, 11-39.
- Ajzen, I. (1991), "The Theory of Planned Behaviour", *Organizational Behaviour and Human Decision Processes*, 50(2): 179-211.
- Ajzen, I. (2001), "Nature and operation of attitudes", *Annual Review of Psychology*, 52: 27-58.
- Ajzen, I. (2005), *Attitudes, personality, and behaviour*, 2nd Ed., Chicago, IL: Open Univ. Press.
- Ajzen, I. (2011), *Constructing a TpB Questionnaire: Conceptual and Methodological Considerations*, <http://people.umass.edu/aizen/pdf/tpb.measurement.pdf>, 09/02/2011.
- Armitage, C. J. and Conner, M. (2001), "Efficacy of the Theory of Planned Behaviour: A meta-analytic review", *British Journal of Social Psychology*, 40(4): 471-499.
- Audet, J. (2004), "L'impact de deux projets de session sur les perceptions et intentions entrepreneuriales d'étudiants en administration", *Journal of Small Business and Entrepreneurship*, 17(3): 223-240.
- Autio, E., Keeley, R. H., Klofsten, M., Parker, G. G. C., and Hay, M. (2001), "Entrepreneurial intent among students in Scandinavia and in the USA", *Enterprise and Innovation Management Studies*, 2(2): 145-160.
- Baron, R. A. (1997), "Cognitive mechanisms in the decision to become an entrepreneur: The role of counterfactual thinking and the experience of regret", *Frontiers of Entrepreneurship Research 17*, 148-155.
- Baron, R. A. (2004), "The cognitive perspective: A valuable tool for answering entrepreneurship's basic "why" questions", *Journal of Business Venturing*, 19(2): 221-239.
- Baron, R. A. (2007), "Behavioral and cognitive factors in entrepreneurship: Entrepreneurs as the active element in new venture creation", *Strategic Entrepreneurship Journal*, 1(1-2): 167-182.
- Baron, R. (2008), "The role of affect in the entrepreneurial process", *Academy of Management Review*, 33(2): 328-40.
- Bird, B. (1988), "Implementing entrepreneurial ideas: the case for intentions", *Academy of Management Review*, 13(3): 442-453.
- Brännback, M., Carsrud, A., Elfving, J., and Krueger, N. (2006), *Exploring entrepreneurial passion: A study of lethargic intentions and passionate opportunity exploitation*, XXth RENT Conference, Brussels, Belgium.
- Carter, N. M., Gartner, W. B., Shaver, K. G., and Gatewood, E. J. (2003), "The career reasons of nascent entrepreneurs", *Journal of Business Venturing*, 18(1): 13-39.
- Cooper, S. Y. and Lucas, W. A. (2006), "Developing self-efficacy for innovation and entrepreneurship. An educational approach", *International Journal of Entrepreneurship Education*, 4: 141-162.
- Cooper, S. Y. and Lucas, W. A. (2007), "Developing entrepreneurial self-efficacy and intentions: Lessons from two programmes", in TSE Entre: Turku School of Economics (ed): *Proceedings of the 52nd ICSB World Conference*, Turku: Hansaprint.
- Cox, L. W., Mueller, S. L., and Moss, S. E. (2002), "The impact of entrepreneurship education on entrepreneurial self-efficacy", *International Journal of Entrepreneurship Education*, 1(2): 229-245.
- Douglas, E. J. and Shepherd, D. A. (2002), "Self-employment as a career choice: attitudes, entrepreneurial intentions, and utility maximization", *Entrepreneurship Theory and Practice*, 18(3): 5-10.
- Engle, R., Dimitriadi, N., Gavidia, J., Schlaegel, C., Delanoe, S., Alvarado, I., He, X., Baume, S., and Wolff, B. (2010), "Entrepreneurial intent. A twelve-country evaluation of Ajzen's model of planned behaviour", *International Journal of Entrepreneurial Behaviour and Research*, 16(1): 35-57.
- Fayolle, A. (2000), "Exploratory study to assess the effects of entrepreneurship programmes on French student entrepreneurial behaviours", *Journal of Enterprising Culture*, 8(2): 169-184.
- Fayolle, A. (2005), "Evaluation of entrepreneurship education: Behaviour performing or intention increasing?", *International Journal of Entrepreneurship and Small Business*, 2(1): 89-98.
- Fishbein, M. (2000), "The role of theory in HIV prevention", *Aids Care*, 12(3): 273-278.

- Fishbein, M. and Ajzen, I. (1975), *Belief, attitude, intention, and behaviour: An introduction to theory and research*, Reading, MA: Addison-Wesley.
- Forbes, D. P. (1999), "Cognitive approaches to new venture creation", *International Journal of Management Reviews*, 1(4): 415-439.
- Francis, J. J., Eccles, M. P., Johnston, M., Walker, A., Grimshaw, J., Foy, R., Kaner, E. F. S., Smith, L. and Bonetti, D. (2004), *Constructing questionnaires based on the Theory of Planned Behaviour: A manual for health services researchers*, Centre for Health Services Research, University of Newcastle upon Tyne, ReBEQI Working Paper 2, Newcastle, UK.
- Hardeman, W., Johnston, M., Johnston, D. W., Bonetti, D., Wareham, N. J., and Kinmonth, A. L. (2002), "Application of the Theory of Planned Behaviour in behaviour change interventions: A systematic review", *Psychology and Health*, 17(2): 123-158.
- Haase, H. and Lautenschläger, A. (2009), "Impact of a simulation-based pedagogy in entrepreneurship education: Comparative insights from Germany, Spain, Thailand and China", *International Review of Entrepreneurship*, 7(4): 327-352.
- Hmieleski, K. and Corbett, A. (2006), "Proclivity for improvisation as a predictor of entrepreneurial intentions", *Journal of Small Business Management*, 44(1): 45-63.
- Iakovleva, T., Kolvereid, L., and Stephan, U. (2011), "Entrepreneurial intentions in developing and developed countries", *Education and Training*, 53(5): 353-370.
- Koch, L. T. (2003), "Theory and practice of entrepreneurship education. A German view", *International Journal of Entrepreneurship Education*, 1(4): 633-660.
- Kolvereid, L. (1996), "Prediction of employment status choice intentions", *Entrepreneurship Theory and Practice*, 21(1): 47-57.
- Kolvereid, L., Iakovleva, T., Kickul, J., Åmo, B. W., and Steshin, A. (2007), "To start a business: Entrepreneurial Intentions among Russian, Norwegian and Finnish students", in Anatoli Bourmistrov and Frode Mellemvik (eds), *Norwegian-Russian Cooperation in Business Education and Research: Visions and Challenges in Perspectives of the High North*, Oslo: Cappelen Akademisk Forlag, 49-68.
- Krueger, N. F. and Brazeal, D. (1994), "Entrepreneurial potential and potential entrepreneurs", *Entrepreneurship Theory and Practice*, 18(3): 91-104.
- Krueger, N. F. and Carsrud, A. (1993), "Entrepreneurial intentions: Applying the Theory of Planned Behaviour", *Entrepreneurship & Regional Development*, 5(4): 315-330.
- Krueger, N. F., Reilly, M. D., and Carsrud, A. (2000), "Competing models of entrepreneurial intentions", *Journal of Business Venturing*, 15(5-6): 411-432.
- Lee, L., Wong, P. K., Foo, M. D., and Leung, A. (2011), "Entrepreneurial intentions: The influence of organizational and individual factors", *Journal of Business Venturing*, 26(1): 124-136.
- Lourenco, F. and Jones, O. (2006), "Developing entrepreneurship education. Comparing traditional and alternative teaching approaches", *International Journal of Entrepreneurship Education*, 4: 111-140.
- Liñán, F. (2008), "Skill and value perceptions: How do they affect entrepreneurial intentions?", *The International Entrepreneurship and Management Journal*, 4(3): 257-272.
- Liñán, F. and Chen, Y. W. (2009), "Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions", *Entrepreneurship Theory and Practice*, 33(3): 593-617.
- Mitchell, R. K., Busenitz, L., Lant, T., McDougall, P. P., Morse, E. A., and Smith, J. B. (2002), "Toward a theory of entrepreneurial cognition: Rethinking the people side of entrepreneurship research", *Entrepreneurship Theory and Practice*, 27(2): 93-104.
- Moriano, J. A., Gorgievski, M., Laguna, M., Stephan, U., and Zarafshani, K. (2012), "A cross cultural approach to understanding entrepreneurial intention", *Journal of Career Development*, 39(2): 162-185.
- Osgood, C. E., Suci, G. J., and Tannenbaum, P. H. (1957), *The measurement of meaning*, Urbana: University of Illinois Press.
- Pittaway, L. and Cope, J. (2007), "Entrepreneurship education. A systematic review of the evidence", *International Small Business Journal*, 25(5): 479-510.
- Shane, S. A. (2003), *A general theory of entrepreneurship: The individual-opportunity nexus*, Cheltenham, UK/Northampton, MA, USA: Edward Elgar.

- Shapero, A. and Sokol, L. (1982), "The social dimensions of entrepreneurship", in Calvin A. Kent, Donald L. Sexton, and Karl H. Vesper (eds), *Encyclopedia of entrepreneurship*, Englewood Cliffs, NJ: Prentice-Hall, 72-90.
- Simon, M., Houghton, S. M., and Aquino, K. (2000), "Cognitive biases, risk perception and venture formation: How individuals decide to start companies", *Journal of Business Venturing*, 15(2): 113-134.
- Souitaris, V., Zerbinati, S., and Al-Laham, A. (2007), "Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and resources", *Journal of Business Venturing*, 22(4): 566-591.
- Van Auken, H., Fry, F., and Stephens, P. (2006), "The influence of role models on entrepreneurial intentions", *Journal of Developmental Entrepreneurship*, 11(2): 157-67.
- Van Gelderen, M. and Jansen, P. (2006), "Autonomy as a start-up motive", *Journal of Small Business and Enterprise Development*, 13(1): 23-32.
- Van Gelderen, M., Brand, M., van Praag, M., Bodewes, W., Poutsma, E., and van Gils, A. (2008), "Explaining entrepreneurial intentions by means of the theory of planned behaviour", *Career Development International*, 13(6): 538-559.
- Wadson, N. (2006), "Cognitive aspects of entrepreneurship: Decision-making and attitudes to risk", in Mark Casson, Bernard Yeung, Anuradha Basu, and Nigel Wadson (eds), *The Oxford handbook of entrepreneurship*, New York: Oxford University Press.
- Zellweger, T., Sieger, P., and Halter, F. (2011), "Should I stay or should I go? Career choice intentions of students with family business background", *Journal of Business Venturing*, 26(5): 521-536.

Appendix

Answers to the open question: “Has the introductory course in entrepreneurship changed your mind regarding a potential venture creation?” (translated from answers written in German)

- “A high degree of risk has to be taken into account.”
- “No, because I was already aware of a lot of these conditions before, but they are more apparent to me now.”
- “My estimation regarding the start-up process is more realistic.”
- “Now I can imagine how to coordinate building up branches within a company.”
- “Listening to the introductory course, I gained important information on my own start-up.”
- “More optimistic view.”
- “Nothing in principle; I am rather more critical.”
- “It seems to be difficult (not as easy as I thought.) A lot of aspects have to be taken into account, which I did not have in mind or which I was clueless about.”
- “Good ideas are important, but without correct planning, they are (almost) worthless.”
- “I think being an entrepreneur is more desirable than before.”
- “I am dealing more critically with the idea of being an entrepreneur; many things seem to be clearer, but more complicated as well.”
- “Somewhat, yes. My doubts regarding risks, stress and effort have been confirmed, especially by the guest lecture.”
- “Becoming an entrepreneur seems to be more difficult now.”
- “Yes, because I gained a little insight into start-up management.”
- “I have to consider more factors than I would have expected before.”