

# Critical Incidents Typically Emerging during the Post-Formation Phase of a New Venture: Perspectives for Entrepreneurship Education and Start-Up Counselling

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## Abstract

During the post-formation phase, young ventures are often in danger of sliding into bankruptcy. The entrepreneur has to deal with a multitude of complex problems, decisions have to be made under time pressure or uncertainty, and upcoming crises have to be perceived in time. This paper presents seven critical incidents that are (1) realistic, typical, and likely to emerge during the first years of a start-up's existence, (2) assumed to cause severe financial crises for the new venture, but (3) possible to be overcome by the entrepreneur if he makes appropriate decisions. Seven incidents were developed on a theoretical basis and then empirically validated by questionnaires presented to (future) entrepreneurs and start-up counsellors (n = 627) as well as to a sample of students who are at least interested or even engaged in the field of entrepreneurship (n = 367). The incidents reveal likely challenges for entrepreneurs in the post-formation phase. This discovery opens new perspectives for preparing entrepreneurs to deal with the typical risks of the post-formation phase. For example, these lessons provide opportunity for an application within case-oriented courses of entrepreneurship in higher and vocational education and opportunity for reflection on probable emerging crises in start-up counselling.

**Keywords:** Critical incidents, Post-formatational risks, Entrepreneurship education, Start-up counselling

## 1. Typical Critical Incidents Affecting New Ventures in the Post-Formation Phase

In the so-called post-formation phase that describes the later stages of the formation process, from the actual start of the business until the venture reaches the break-even point for the first time (Unterkofler, 1989, p. 37), a new enterprise faces significant challenges. During this phase, young enterprises frequently break down (Bosma, Acs, Autio, Coduras, & Levie, 2009, p. 11; Lang-von Wins, 2004, p. 123; Vanevenhoven & Liguori, 2013) so that the danger of economic damage as well as individual harm is omnipresent. However, during this time the entrepreneur plays a critical role in developing strategies for success as well as avoiding financial crises of the young startup (McCarthy, 2003, p. 328). He has to address these upcoming critical incidents (Baum, Locke, & Smith, 2001). However, this is quite challenging if – as analyses of the entrepreneurs' tasks pointed out (Lang-von Wins, 2004; Müller, Volery, & Von Siemens, 2012) - the entrepreneur works in a very dynamic environment. He has to solve complex, ill-structured problems, take risks, and make decisions under time pressure or conditions of uncertainty, in particular, during the post-formation phase (Lang-von Wins, 2004, p. 80). The entrepreneur has to manage multiple changes, adapt to differing requirements (Müller et al., 2012), deal with financial liability, in particular with liability of newness as well as the liability of smallness (Stinchcombe, 1965), and overcome special risks of collapse.

Thus, the entrepreneur's decisions and competences are key issues for the company's survival in this phase. In an educational perspective, this stresses the importance to foster relevant key competences in entrepreneurship education in order to prepare (future) entrepreneurs for gaining the young company's success and reducing failure under conditions of dynamism. However, to date there is a lack of sufficient insight into the key competences an entrepreneur needs to successfully handle upcoming challenges of the post-formation phase. Moreover, entrepreneurship education programmes (EEPs) in higher education often concentrate on awareness education (Liñán, 2004, p. 10) as a means of strengthening entrepreneurial intentions (Krueger & Carsrud, 1993; Müller, 2011; Fretschner, 2014). EEPs often do not focus on how to implement intentions, deal with dynamism, and establish a new venture on the market (Garavan & O'Conneide, 1994; Gielnik et al., 2015; Liñán, 2004, pp. 11-12). Furthermore,

most EEPs concentrate on developing the (future) entrepreneurs' "sense of success," neglecting the possible benefits of learning how to deal with failure (Oser & Volery, 2012) – for example, learning from errors (Minsky, 1997) or coping with risk or negative emotions like fear of failure (Brixy, Hessels, Hundt, Sternberg, & Stüber, 2009). However, the (potential) failure of new ventures is an issue that should not be ignored, either in entrepreneurial research or in entrepreneurship education (Knott & Posen, 2005; Mandl, Berger, & Kuckertz, 2016; Oser & Volery, 2012; Peng, Yamakawa, & Lee, 2010), because breakdowns can have fundamental consequences, both for the economy and for the individual. Thus, the question remains how to prepare future entrepreneurs for dealing with typical challenges of the post-formation phase.

Referring to research on cognitive (entrepreneurial) expertise, it would be fruitful for (future and current) entrepreneurs to spend time on training how to deal with their future tasks, in particular with difficulties and barriers. This includes to reflect on how to note such typical critical incidents probable to emerge in the post-formation phase, to spot them and deal with them in due time, or even to transform the perception of critical incidents into new entrepreneurial opportunities (Mitchell, Mitchell, & Smith, 2008). Following the idea of "deliberate practice" (Dreyfus & Dreyfus, 1986; Ericsson, Krampe, & Tesch-Römer, 1993; Unger, Keith, Hilling, Gielnik, & Frese, 2009) it is important for developing (entrepreneurial) expertise to focus on difficult and challenging problems. Therefore, there is the need to know typically and probably emerging critical incidents emerging in the post-formation phase. If there are situations typically emerge in the post-formation phase across different kinds of startups and indicate an upcoming financial crisis for the young company, (future) entrepreneurs could be trained in how to spot and deal with these upcoming financial crises in EEPs or even reflect on whether these incidents have already challenged their own startup, e.g. within startup counselling. Deliberate practice on typically emerging critical incidents would allow addressing dynamism (Liñán, 2004) and preparing (future) entrepreneurs to be aware of and know how to deal with entrepreneurial risks.

However, up to now critical incidents that typically emerge in the post-formation phase and additionally indicate upcoming severe financial problems still have to be identified. Therefore, this paper first (1) aims to develop such incidents (Abs & Pyka, 2013; Hartig & Jude, 2007, p. 23) by referring to theoretical approaches (Stinchcombe, 1965) and previous empirical findings (e.g. Brüderl, Preisendörfer, & Ziegler, 2007) (see chapter 2). Furthermore, this paper intends (see 2.3.) to develop an instrument that is fruitful for testing the extent to which the developed critical incidents can be confirmed as valid and critical within the post-formation phase of a young venture (see chapter 4). Two studies were conducted to test whether start-up consultants, entrepreneurs, and future entrepreneurs (students interested in entrepreneurship) confirmed these incidents to be critical in regard to economic success and to be manageable and typical, probable and realistic (see 4.1-4.2). Finally, this paper discusses the results and provides further perspectives on how these incidents could be fruitfully applied to entrepreneurship education and startup counselling (see chapter 5).

## **2. Developing an Inventory of Critical Incidents**

### *2.1 Theoretical Foundations and Previous Empirical Research*

#### **2.1.1 Success and Failure during the Post-Formation Phase**

Startups are young firms created to pursue a technological innovation or to target market demand for a specific product or service that have not been offered before or adequately supplied by well-established companies in the industry (Ansari & Riasi, 2016). Startups attempt to use these opportunities to sell their products or services by creating a competitive advantage and by overcoming the barriers to market entry (Aghdaie, Seidi, & Riasi, 2012). When starting a business, entrepreneurs normally intend to achieve positive business results that enables the startup to stay in the market for a longer time. Survival in the first years and reaching the break-even point can be considered baselines for defining "firm success." However, it may be difficult for an entrepreneur to recognize upcoming crises in due time in a dynamic environment – his daily work is characterized by brevity and fragmentation, managing many disparate tasks lasting only a few minutes each (Müller et al., 2012). Surrounding events may become increasingly acute, and the economic status of the venture can be jeopardized. Sometimes, a single situation or an inadequate decision can directly cause a financial crisis of the young startup. Transferring results of lifespan psychology to a "life" of a new enterprise it can also be assumed that a single event could start an incremental process, leading to a situation in which the start-up is in danger of collapse (see Filipp, 1990, p. 9; Rosch, 1988, p. 68). Critical incidents highlight the need for someone—usually the entrepreneur—to be motivated and able to make adequate decisions to (reactively) overcome or (proactively) prevent the situation in question.

### 2.1.2 The Organisational-Ecology Approach

In order to identify such critical incidents typically emerging during the post-formation phase, this paper refers to well-known and basic theoretical approaches: the organisational-ecology approach (Stinchcombe, 1965) and the systematization of environmental impacts as suggested by Bronfenbrenner (1981). The organisational-ecology approach considers entrepreneurial success (or failure) to be dependent on environmental (economic, social, and political) conditions (Stinchcombe, 1965). The young company is embedded in a system of organisations and interacts with competitors, clients, or suppliers. The situational conditions of new ventures include unknown or hidden entrepreneurial opportunities to exploit as well as challenges or barriers that need to be dealt with by choosing appropriate strategies. During the first years after a business has started, and especially when financial resources are completely exhausted, there is an increased danger that the new venture will fall into a financial crisis or insolvency; young ventures are more liable to these dangers than companies already established in the market (Brüderl et al., 2007). Starting a business often entails small company size and reduced financial stability (“the liability of smallness”). The challenge is to prevail on the market, to outperform already well-known and settled firms (“the liability of newness”) (Sheperd, Douglas, & Shanley, 2000, p. 395). Thus, the new venture must cope with challenging conditions that the entrepreneur cannot entirely avoid, and these challenges mark the “normal” entrepreneurial risks the entrepreneur must manage (Shepherd et al., 2000, pp. 394-396).

### 2.1.3 Levels of Environmental Influences as Referred to by Bronfenbrenner

The systematic and criteria-based development of critical incidents affecting young enterprises is referred to as “Bronfenbrenner’s approach” (Bronfenbrenner, 1981, pp. 41-42). Bronfenbrenner distinguished four levels of environment that may have an impact on how people perceive and assess critical incidents (Filipp, 1990, p. 20): the micro-, meso-, exo-, and macro-levels. The microsystem and mesosystem refer to elements in the environment (people, enterprises, organisations) that the entrepreneur is in direct relationship with. Incidents that are influenced by micro-level and meso-level elements can be managed if the entrepreneur makes appropriate and timely decisions (Shepherd et al., 2000). However, influences or challenges classified as elements of the so-called exo-system refer to exogenous factors, such as political decisions, which seem to emerge suddenly or unexpectedly and cannot usually be controlled by the entrepreneur (Freiling, 2006, p. 140). Other influences at the macro-level (such as culture, social conditions, ideology, and values) do not constitute singular incidents but rather weaken or strengthen the impact of other critical incidents at the micro-, meso- or exo-level of the environmental system (Bronfenbrenner, 1981, p. 42; Freiling, 2006, p. 140).

For present purposes, the scope of critical incidents was confined to influences on the new venture in the micro- and meso-systems—in other words, only to upcoming problems to which the entrepreneur is able, in principle, to find solutions. Influences of the macro-system were modelled as conditions modifying those incidents located (see 3.3.3.).

### 2.1.4 Critical Entrepreneurial Tasks in the Post-Formation Phase

To specify valid critical incidents at the micro- and meso-levels, the literature on entrepreneurship, business administration, organisational and work psychology, and business education has been analysed. The following entrepreneurial tasks can be regarded as very important during the first years of a new venture (Lang-von Wins, 2004, p. 80).

#### Customers

The entrepreneur should focus on retaining customers and establishing their loyalty, solving conflicts with customers if they emerge, and acquiring new (groups of) customers (Gruber, 2004, p. 164; Hallowell, 1996, p. 28; Shepherd et al., 2000, p. 398).

#### The Growth Factors of a Young Company

To become established on the market, a new venture has to extend its sales market, make the company known, develop sustainable demand, and broaden the range of goods and services offered (Volkman & Tokarski, 2006, p. 421). For example, a crucial task is to hire high-performing employees who are a good fit for the entrepreneurial organisation (Lang-von Wins, 2004, p. 83; Aldrich & Auster, 1986, p. 181; Volkman & Tokarski, 2006, p. 497).

#### Survival Factors

To successfully pass the post-formation phase, it is not sufficient to focus on achieving growth; at the same time, the entrepreneur has to protect the new venture from bankruptcy. The start-up must prevail over strong competitors,

endure periods when there are few orders, stabilize a foundation of contracts, and handle many different tasks simultaneously (Klandt, 2006, p. 157, 182, 220-222; Lang-von Wins, 2004, pp. 80-84; Müller et al., 2012).

#### Work-Life Balance

Although (or even because) entrepreneurs are working hard, it is essential to find an appropriate work-life balance in order to sustain the post-formation phase and overcome upcoming challenges. It is both fruitful and necessary for family and friends to develop an understanding of the demands of entrepreneurial activity and sustain in support the entrepreneur (Brüderl & Preisendörfer, 1998, p. 221; Lang-von Wins, 2004, pp. 83-84). Otherwise, upcoming crises in the entrepreneur's private life increase the liability of the new enterprise.

#### 2.1.5 Criteria to Validate Incidents: Target Relevance, Controllability, and the Reality Check

Thus, the theoretical approaches offer ideas about how to constitute authentic and complex problems that may represent critical incidents in the post-formation phase. Before recommending incidents for application in EEPs or start-up counselling, one should validate them empirically as both "critical" and "typical" entrepreneurial problems. To this end, the present study refers to the assumptions of life-span psychology. In her study of critical life incidents, Filipp (2007, pp. 359-361) identified ten characteristics of incidents representing a level of threat to a person's life that may lead to a life crisis. In this study, theory about crises in individuals' lives was applied to the "live" of a new enterprise. Thus, two of the selected dimensions reflect the degree of threat to a firm's survival. It is assumed here that the more an incident is evaluated as a threat to the economic success of the new venture (target relevance), and the less it is attributed with opportunities to influence and improve the environmental conditions (controllability), the more likely it becomes that the incident will be rated as a critical incident.

In addition to criteria specifying the grade of threat it is intended to check whether the incidents are representative and probable to emerge in the post formation phase. Therefore, the incidents will have to stand a "reality check".

#### Target Relevance (TR)

Rating an incident for target relevance means assessing the degree of potential threat that the situation might entail to interfere with the economic goals of the start-up company. A higher score on target relevance refers to a higher probability of the new firm's potential failure as a result of the critical incident.

#### Controllability (CO)

Human beings have an inherent need to control their environment and arising situations (Heckhausen & Schulz, 1995, p. 285), and, for this reason, situations that are not subject to one's control may cause discomfort and uncertainty. In respect to similar incidents, Rotter (1966, p. 1) differentiated individual tendencies of the "internal / external locus of control." An internal locus of control denotes a person's tendency to perceive positive or negative situations as contingent upon his own behaviour and points to personal characteristics that are relatively stable (Rotter, 1966, p. 1). Because individuals with a high internal locus of control believe that they can control outcomes, they invest more effort and persistence in achieving those outcomes, which is likely to be beneficial to a start-up and its successful maintenance (Rauch & Frese, 2007, p. 359). A high internal locus of control is often found to be positively correlated with business opportunity exploitation and success (Fallgatter, 2002, p. 1; Klandt, 1984, pp. 190-191). In contrast, individuals with a high external locus of control are likely to be more passive. However, according to Rotter (1966, p. 21), this relatively stable personal trait is not constant; rather, it varies across different situations and it is an important personal determinant in entrepreneurship (Boermanns & Willebrands, *in press*). Thus, in this paper, the locus of control is measured as individual perceptions of control in relation to various entrepreneurial incidents.

#### Reality Check (RPT)

A third dimension for evaluating this study's critical incidents serves as a "reality check." It is not sufficient only to identify how "critical" situations measure according to the constructs of target relevance and controllability, because no implications for the actual occurrence of such situations in an entrepreneur's everyday life can be drawn on this basis. Therefore, the identified incidents are additionally assessed on a "reality check" that evaluates three counts: whether the situations are regarded as realistic, probable, and typical of the post-formation phase. "Realistic" refers to the extent to which the incident is generally representative of an entrepreneurial critical incident. "Probable" reflects the probability of the actual occurrence of the incident in an entrepreneur's everyday life. "Typical" refers to the degree to which the incident exemplifies the obstacles characteristically encountered by entrepreneurs in the post-formation phase.

## 2.2 Preliminary Empirical Studies to Specify Seven Critical Incidents

After a process of consolidation based on the literature review, seven critical incidents were identified that may lead to financial crisis but that are capable of being overcome by entrepreneurs. In a preliminary mixed-method study, these situations were presented to start-up consultants from the German chambers of industry and commerce. The consultants were asked to rate and critically evaluate the quality of the identified entrepreneurial situations according to target relevance, controllability, and the reality check. Based on open-ended questions, 37 experts provided feedback regarding the situations, which then led to further (smaller) adoptions of the incidents.

Overall, the final versions of the seven situations were considered to cover the most critical day-to-day events that may occur in all functional areas during the post-formation phase and insofar the authors decided to include them in further studies (see 2.1.4).

- Situation 1 : Loss of orders because of a lack of human resources
- Situation 2: Bankruptcy of a key client
- Situation 3: Dissatisfied customer(s)
- Situation 4: Loss of orders to a competitor
- Situation 5: Lack of overview of the financial situation of the new venture (see also Figure 1)
- Situation 6: Lack of support from the family towards entrepreneurship
- Situation 7: Stepping out of a member of the founding team

### **Situation 5: Lack of an overview of the economic situation of the new venture**

An entrepreneur who is engaged in starting his business does not have enough time to take the financial situation of the new venture into account. Therefore, he delegates the financial and accounting issues to a tax counsellor. The entrepreneur receives the documents the counsellor has prepared and files them. Towards the end of the second year in business, the tax counsellor informs the entrepreneur that the business costs, which were already high in the first year, have increased, and the profit has therefore decreased dramatically.

Figure 1. Situation 5 as an example of a critical incident

## 2.3 Aims

These seven critical incidents, furthermore, were tested for internal (content) validity in three steps. First, in a cross-sectional study, quantitative methods were used (see 3.1). Start-up consultants, (future) entrepreneurs, and students interested in entrepreneurship filled in an online questionnaire and assessed the incidents and the items developed for grasping situational judgments on crucial entrepreneurial incidents in the post-formation phase were tested as to whether they showed sufficient reliability and validity (see 4.1).

Second, the incidents were studied as to whether they could be regarded as authentic problems that probably occur in new ventures during the post-formation phase (reality check) and whether they could be regarded as critical with regard to the criteria of target relevance and controllability (see Filipp, 2007, p. 338) (see 4.2).

Third, in a second study, students who were already engaged or at least interested in entrepreneurship assessed variations of situation 5 that differed according to added situational influences on the macro-level (see 4.3). It is conceivable that influences located in the macro-system (e.g. global economic situations) could have an impact on the judgement of critical situations. While a recession would be assumed to worsen an upcoming financial crisis for a new venture (i.e. target relevance would increase and controllability would decrease), an economic boom would be assumed to weaken target relevance and increase controllability.

## 3. Methods

### 3.1 Study One

#### 3.1.1 Design and Sample

Participants of a cross-sectional study (start-up consultants, entrepreneurs, and students) filled in an online questionnaire one at a time. They were asked to rate the abovementioned seven incidents on three scales: target relevance, controllability, and the reality check. In total, 1525 start-up consultants and 1209 entrepreneurs were contacted by email. The selected consultants all worked on the EXIST programme supporting entrepreneurship in Higher Education or as start-up counsellors at the Institute of Liberal Occupations in Nuremberg. The entrepreneurs were all engaged in the field of education and counselling, and they provided their contact data through a specified

Internet database. The emails included a link to the online questionnaire developed through the survey program Unipark. Students were recruited through the social networks Facebook and studiVZ, through the students' online forum for the Faculty of Business Administration at the Munich School of Management, and through distribution of the link among business students at the Institute of Business Education of Goethe University, Frankfurt am Main, and the Ludwig Maximilian University in Munich.

Intensive data quality management, which included missing value analysis, expectation-maximization imputation, and outlier detection, yielded 627 complete and evaluable data lines (63.6% males, 36.4% females; mean age = 42.02). Regarding the participants' educational background, 51% of the participants had a university degree, 6.7% had a doctoral degree, 18.2% held a university entrance qualification, and 5.6% had completed different levels of secondary school. Only 0.3% (2 people) had not mentioned to have graduated from any school, and 8.1% selected "other" regarding their educational background.

To test whether the incidents were perceived as target relevant and controllable as well as typical, realistic, and likely to emerge, all participants were treated as one homogeneous group, though we assume that personal determinants (for example, self-efficacy or entrepreneurial expertise) have an impact on individuals' situational ratings (for further analysis of how personal determinants, especially entrepreneurial expertise, impact situational ratings, see Heinrichs, submitted).

### 3.1.2 Measures

Participants evaluated the seven critical incidents, using nine items reflecting the three constructs—target relevance, controllability, and the reality check—each comprising three items. In each case, participants rated items on an eight-point Likert scale ranging from "not at all" (one) to "totally agree" (eight). Furthermore, the additional response option "unclear" was provided in order to avoid response biases resulting from unwanted or forced ratings.

#### Target Relevance (TR)

Three indicators of varying difficulty were used to assess target relevance: (1) the threat of bankruptcy ("Is the new venture in danger of bankruptcy in such a situation?"); (2) upcoming liquidity problems ("Is the venture in danger of insolvency?"); and (3) decreased profit or increased loss ("Are the business margins in danger of getting worse in such a situation?"). Target relevance, as measured by these three items for each situation (1-7), achieved reliability (as measured by Cronbach's alpha) between 0.75 (situation 7) and 0.92 (situation 3; see Table 1).

#### Controllability (CO)

The items used to assess controllability were the following: (1) "Could entrepreneurs overcome such a situation if they chose appropriate measures?"; (2) "Is it possible to apply appropriate measures in order to cope with such a situation successfully?"; and (3) "Could entrepreneurs apply adequate action strategies to resolve such a situation?" Controllability was assessed by these three items for each situation (1-7), with a Cronbach's alpha between 0.81 (situation 1) and 0.92 (situation 6; see Table 1).

#### Reality Check (RPT)

To test whether the incidents were assessed as realistic, probable, and typical for the post-formation phase, the following questions were applied to each situation: (1) "Do you think this situation is realistic?"; (2) "Do you think this situation would be likely to emerge?"; and (3) "Do you regard this situation as typical of the first years after a business has been started?" The results for the reality check (if the incidents were realistic, probable, and typical) in respect to each situation (1-7) yielded a Cronbach's alpha between 0.70 (situation 2) and 0.84 (situation 5). The Cronbach's alpha scores of at least 0.7 for target relevance, controllability, and the reality check indicated sufficient reliability; in most cases, the scores were higher than 0.8 and of at least moderate size (Bühner, 2006, p. 140; see Table 1).

Table 1. Internal consistency of the seven critical incidents – Cronbach's alpha

	$\alpha$ (TR)	$\alpha$ (CO)	$\alpha$ (RPT)
Situation 1	0.85	0.81	0.82
Situation 2	0.88	0.85	0.70
Situation 3	0.92	0.90	0.79
Situation 4	0.91	0.90	0.75
Situation 5	0.90	0.89	0.84
Situation 6	0.87	0.92	0.82
Situation 7	0.75	0.88	0.81

### 3.2 Study Two

#### 3.2.1 Design and Sample

Two groups of students were asked to fill out paper-pencil tests: (1) participants on an entrepreneurship course at German universities called 5 Euro Business<sup>2</sup>, and (2) students aiming for a master or bachelor degree that offers good opportunities for self-employment but does not provide any support in entrepreneurship (e.g. degrees in medicine, economics, law, and art). In total, 367 students completed the questionnaire about the developed situations (194 males, 173 females; mean age = 27.4).

#### 3.2.2 Measures

In this study, the incidents were evaluated on just two criteria: target relevance and controllability. These scales were applied to three out of the seven situations. The intention was to choose incidents that were highly critical regarding target relevance (high target relevance values) but that were possible to overcome (low controllability values) in order to identify incidents that would be useful for preparing young entrepreneurs. In the previous findings, situations 1 and 4 showed the highest rates of target relevance (see Table 2). By contrast, situations 4 and 5 showed the lowest rates of controllability. Situations 1, 4, and 5 were therefore selected for further examination.

Table 2. First sample: Descriptives and confidence ranges

	<i>Target relevance</i>			<i>Controllability</i>			<i>Reality check</i>		
	<i>M</i>	<i>SD</i>	<i>CI</i>	<i>M</i>	<i>SD</i>	<i>CI</i>	<i>M</i>	<i>SD</i>	<i>CI</i>
Sit 1	5.31	1.73	5.17-5.44	1.83	0.86	1.76-1.90	5.44	1.70	5.31-5.57
Sit 2	4.91	1.69	4.77-5.04	2.53	1.31	2.43-2.63	6.75	1.12	6.66-6.84
Sit 3	5.66	1.63	5.53-5.79	1.99	1.04	1.91-2.07	6.32	1.29	6.22-6.43
Sit 4	6.99	1.13	6.90-7.08	2.97	1.53	2.85-3.09	6.32	1.28	6.22-6.42
Sit 5	6.73	1.28	6.62-6.83	1.71	0.89	1.64-1.78	6.49	1.37	6.38-6.60
Sit 6	5.42	1.79	5.27-5.60	2.54	1.36	2.43-2.65	6.54	1.30	6.44-6.64
Sit 7	5.60	1.62	5.47-5.73	2.05	1.09	1.96-2.14	6.10	1.37	6.00-6.21

Notes. CI = Confidence interval.

Like all seven incidents, situation 5 focused on situational influences located in the micro- and mesosystems of the new venture (see 2.1.3). Here, this situation was varied by adding an influence located in the macro-system: the global economic situation. Thus, one subgroup of participants (n = 189) was asked to assess situation 5 in its original version and as varied under economic boom conditions; the remaining participants (n = 178) were asked to rate situation 5 as varied under recession conditions.

## 4. Results

### 4.1 Exploratory Factor Analyses

Exploratory factor analyses of each situation were conducted to test whether the three scales could assess the critical incidents and reproduce the three constructs (TR, CO, RPT) unidimensionally. For all critical incidents, Horn's parallel analysis, Velicer's minimum average partial (MAP) test, and scree plots suggested that the three factors functioned as theoretically expected. Additionally, in all situations, the assumptions for factor analyses (KMO and Bartlett's Test of Sphericity) were fulfilled. Since the goal was to obtain orthogonal scales that were easy to interpret and that featured "simple structures," a varimax rotation with Kaiser Normalization was used (Bühner, 2006, p. 231). The factor analyses run per incident measured the factor's variance between  $R_1^2 = 74.51\%$  (situation 1) and  $R_5^2 = 81.28\%$  (situation 5). Table 3 shows the results for critical incident 1, representing the quality of the results for all other situations and confirming that the three subscales could be exactly reproduced.

Table 3. Exploratory factor analysis for situation 1

Variables	TR	CO	RPT	Communality
<b>TR item 1</b>	<b>.885</b>	.101		.797
<b>TR item 2</b>	<b>.868</b>			.764
<b>TR item 3</b>	<b>.858</b>			.742
<b>CO item 1</b>		<b>.891</b>		.798
<b>CO item 2</b>	.123	<b>.858</b>		.759
<b>CO item 1</b>		<b>.814</b>		.671
<b>RPT item 2</b>			<b>.879</b>	.773
<b>RPT item 3</b>			<b>.838</b>	.704
<b>RPT item 3</b>			<b>.829</b>	.687
<b>Eigenvalue</b>	2.730	2.310	1.670	

Notes. Factor loadings < .100 are not displayed. KMO = 0.719; Bartlett's Test of Sphericity  $p = 0.000$ ,  $R^2 = 74.51$ . TR = Target relevance, CO = Controllability, RPT = Reality check.

### 4.2 Evaluation of the Critical Incidents

As the critical incidents were developed, their relevance for new ventures during their first years was assessed (see Table 2). As the null hypothesis of the K-S test had to be rejected for each single variable, the data was not normally distributed. However, due to the sample size of 627 observations, parametric tests could be employed even if the data evidenced the weak law of large numbers and the central limit theorem applied (Missong & Mittnik, 2005, p. 68). Thus, it seems appropriate to start with reporting means and confidence intervals (see Table 2). The incidents were revealed to be highly critical in respect to target relevance. The empirical means in all seven situations were higher than the mean of the scale (4.5). Analyses also showed that the theoretical mean was even smaller than the lower bound of the confidence range. By contrast, the results indicated that the situations were not considered to be critical with regard to controllability. Moreover, participants judged that an entrepreneur might be able to overcome and manage these situations. The empirical means for all situations were lower than the theoretical mean, and the theoretical mean was even higher than the higher bound of the confidence range. The results, additionally, confirmed that all seven critical incidents were assessed as highly realistic, probable, and typical. The empirical means for these three reality check criteria showed higher rates than the mean of the scale (4.5) for all seven incidents. The theoretical mean of all situations was below the lower bound of the corresponding confidence range.

### 4.3 Testing Content Validity by Varying Situation 5

The results (see Table 4) reveal that the critical incidents were considered to be highly target relevant (means across three situations first sample: mean (TR) = 6.34; second sample: mean (TR) = 5.58) but otherwise possible to control (first sample: mean (CO) = 2.17; second sample: mean (CO) = 1.55).



Again, the means for target relevance in each situation were higher than the theoretical mean (4.5), and the theoretical mean was below the lower bound of the confidence interval. For controllability, the empirical means were lower than the theoretical mean, and the latter was above the higher bound of the confidence range.

Table 4. Second Sample: Descriptives, reliability, and confidence ranges

	<i>Target relevance</i>				<i>Controllability</i>			
	<i>M</i>	<i>SD</i>	<i>CI</i>	$\alpha$	<i>M</i>	<i>SD</i>	<i>CI</i>	$\alpha$
Across three situations (n = 362)	5.58	1.06	5.47-5.69	0.83	1.55	0.93	1.45-1.65	0.85
Sit 1 (n = 365/364)	5.23	1.39	5.09-5.37	0.81	1.32	1.14	1.20-1.44	0.86
Sit 4 (n = 366/365)	5.98	1.39	5.84-6.12	0.88	2.01	1.34	1.87-2.15	0.88
Sit 5 (Original) (n = 364)	5.53	1.54	5.37-5.69	0.88	1.34	1.25	1.21-1.47	0.91
Sit 5 (Boom) (n = 185/183)	4.88	1.58	4.65-5.11	0.91	1.57	1.33	1.38-1.76	0.90
Sit 5 (Recession) (n = 175)	6.19	1.31	6.00-6.38	0.92	2.26	1.37	2.06-2.46	0.90

Univariate variance analyses were conducted to see whether the different conditions realized for situation 5 impacted the ratings for situation 5 in its original form. Because variance analyses are assumed to be robust for the violation of necessary conditions (Rost, 2007, pp. 191-192) but sensitive if the number of cases in the compared subsamples differ to a large extent, each variance analysis included only data for those participants who also evaluated situation 5 under the particular varied condition (recession (n = 175) or boom (n = 189)). Thus, the number of compared cases in the independent and dependent variable did not differ.

Table 5. Variance analyses – Impact of the global economic situation on the assessment of critical incidents

	p	$\omega^2$	power
Dependent variable: TR (sit 5)			
<i>TR sit 5 – boom (n = 189)</i>	0.001	0.231	0.997
<i>TR sit 5 – recession (n = 175)</i>	0.000	0.379	1.000
Dependent variable: CO (sit 5)			
<i>CO sit 5 – boom (n = 189)</i>	0.014	0.171	0.966
<i>CO sit 5 – recession (n = 175)</i>	0.000	0.254	1.000

The results (see Table 5) confirmed that the evaluations of situation 5 for target relevance and controllability explained the ratings for the varied incidents up to medium and large effects. The results pointed to significant differences under the recession condition for target relevance and controllability in an expected way: Target relevance increased significantly, and controllability showed increased values, indicating that the situation became more critical with respect to controllability. Under the boom condition, by contrast, target relevance decreased, and the mean differences for controllability pointed in an unexpected direction: The situation embedded in a boom condition was assessed as more difficult to overcome than in the initial situation.

## 5. Discussion and Further Perspectives

### 5.1 Summing Up the Results

With regard to the aims of this paper (see 2.3), seven critical incidents that typically emerge in start-ups during the post-formation phase could be derived by theoretical approaches and empirical findings. The seven incidents are (1) loss of orders because of a lack of human resources, (2) bankruptcy of a key client, (3) dissatisfied customer(s), (4) loss of orders to a competitor, (5) lack of an overview of the financial situation of the new venture, (6) lack of family support for entrepreneurial activity, and (7) the departure of a member of the founding team. Moreover, w the

instrument is assumed to examine the critical incidents validly. Due to the factor analysis, the three subscales could be exactly reproduced.

Moreover, the empirical studies confirmed the incidents to be critical with respect to target relevance, and they also confirmed the incidents to be highly controllable—in other words, the incidents could be resolved through appropriate decision-making by entrepreneurs. With regard to the reality check, the situations can be regarded as authentic events, probably and typically occurring during the post-formation phase.

In the second study, participants' perceptions of critical incidents seemed sensitive to influences such as the global economic situation. However, although the influence of personal determinants (like self-efficacy or entrepreneurial knowledge) was not controlled for in the ratings, the situational variations explained the variance of target relevance and controllability with medium to large effects and sufficient power. Individual assessments of the target relevance and controllability of the critical incidents seemed to be sensitive to macro-system changes to the scenarios.

### *5.2 Limitations and Perspectives*

However, the studies and results have limitations. Although it seems that this approach succeeded in developing critical incidents representative of the most important and economically relevant situations that might cause a financial crisis for a new venture, it would be complacent to claim knowledge of all the relevant critical incidents of the post-formation phase. Moreover, there may well be other causes of financial crisis during this phase that were not explicitly included in the critical incidents described here, such as special challenges in acquiring funding after starting a business.

In addition, the scope of this study was systematically limited to influences located in the micro- and mesosystems, and few insights were gained as to how the exo- and macro-systems might challenge a new venture. The construct of the “sense of failure” should be specified in future studies, addressing at least two facets. First, “sense of failure” should cover competences for dealing with upcoming crises that are, in principle, controllable. Second, “sense of failure” should include the entrepreneur's ability to withstand crises that he could not avoid or change because they emerged at the exo- or macro-level (such as, politicians', suppliers', or competitors' decisions). In these latter situations, the entrepreneur probably has to deal with negative emotions and cope with the consequences. Perhaps entrepreneurially relevant traits such as optimism or a positive attitude towards risk-taking would be helpful in dealing with these conditions.

From a methodological perspective, there is scope for further discussion on whether the situations assessed to be critical in respect to target relevance and noncritical in respect to controllability may indicate the presence of methodological artefacts. It might have been expected that incidents that were systematically developed as critical incidents would be rated as severe problems. To confirm the content validity of the seven incidents developed here, it may also be fruitful to develop and evaluate situations that typically emerge in the post-formation phase but that have a lower probability of leading to severe financial crises of the new company (such as problems that carry less uncertainty or are more capable of being overcome by scripts how to act or routines).

Additionally, it has not yet been tested how individual ratings of critical incidents interact with personal determinants like entrepreneurial knowledge (Shane, 2000), self-efficacy (De Noble, Jung, & Ehrlich, 1999), or entrepreneurial expertise (Sarasvathy, 2008; Mitchell, Mitchell, & Mitchell, 2009). If significant and systematic inter- and intra-individual differences in situational judgments were found, these could guide further studies in the field of entrepreneurship education. The development of particular individual (cognitive, motivational, emotional, or volitional) capacities such as entrepreneurial expertise (Sarasvathy, 2008; Mitchell et al., 2009)—which influence people's assessments and strategies in responding to critical incidents (see Heinrichs, submitted)—may prove worthwhile for entrepreneurship education. Further analyses reveal that expertise influences the perception of critical incidents and that, in particular, experts in entrepreneurship seem to perceive higher controllability than novices (see Heinrichs, submitted). Thus, entrepreneurial expertise seems to improve chances of appropriately assessing entrepreneurial risks in the post-formation phase. Referring to “deliberate practice” (Dreyfus & Dreyfus, 1986), it might be fruitful to develop learning environments focusing on preparing (future) entrepreneurs to deal with such relevant and probably emerging entrepreneurial crises and risks. Not only real experiences and entrepreneurial failure, but also representative experiences of role models or other entrepreneurs presented and discussed in text-based cases or case-oriented learning environments may provide good opportunities to foster entrepreneurial expertise.

### 5.3 Conclusions

All in all, the following conclusions for further research can be drawn:

First, the incidents identified and developed here can be regarded as important challenges for new ventures during the post-formation phase, with validity for high target relevance and manageability. Thus, they are confirmed to be appropriate to be applied in EEPs. However, to complete the domain model of entrepreneurial problem-solving competences, further analysis how to respond to risks less critical incidents is necessary. Second, the developed incidents could be used to initiate further projects to measure and develop entrepreneurial competences, focusing on critical incidents and risks. These situations could be applied in authentic environments for technology-based testing, as well as in learning environments, such as case-oriented treatments, to foster domain-specific (entrepreneurial) problem-solving competences (Heinrichs, 2016). In addition to reflecting (cognitively) on critical incidents, it also seems to be important to prepare future entrepreneurs for being aware and regulate their emotions, in particular if an EEP focuses on entrepreneurial risks (Welpel et al., 2012). Third, the identified critical incidents could also be applied as a tool for start-up counselling – to reflect on the entrepreneur's challenges in their own startup on the way to becoming established in the market, to reframe emerging critical incidents and turn them into entrepreneurial opportunities, and to proactively avoid upcoming financial crises in due time. Concentrating on the identified critical incidents in EEPs may enrich EEP towards fostering entrepreneurial expertise, in particular to improve future entrepreneurs' competences on dealing with entrepreneurial risks and to reduce future entrepreneurial failure.

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### References

- Abs, H. J., & Pyka, T. (2013). Using critical incidents for the assessment of citizenship competence. In P. Murray, & D. Lang (Eds.), *Civic education and competencies for engaging citizens in democracies* (pp. 125-148). Rotterdam, the Netherlands: SensePublishers. [https://doi.org/10.1007/978-94-6209-172-6\\_10](https://doi.org/10.1007/978-94-6209-172-6_10)
- Aldrich, H. E., & Auster, E. R. (1986). Even dwarfs started small: Liabilities of age and size and their strategic implications. *Research in Organizational Behaviour*, 8, 165-186.
- Aghdaie, S. F. A., Seidi, M., & Riasi, A. (2012). Identifying the barriers to Iran's Saffron export by using Porter's diamond model. *International Journal of Marketing Studies*, 4(5), 129-138. <https://doi.org/10.5539/ijms.v4n5p129>
- Ansari, A., & Riasi, A. (2016). Modelling and evaluating customer loyalty using neural networks: Evidence from startup insurance companies. *Future Business Journal*, 2(1), 15-30. <https://doi.org/10.1016/j.fbj.2016.04.001>
- Baum, J. R., Locke, E. A., & Smith, K. G. (2001). A multidimensional model of venture growth. *Academy of management journal*, 44(2), 292-303. <https://doi.org/10.2307/3069456>
- Boerman, M. J. & Willebrands, D. (in press). Entrepreneurship, risk perception and firm performance. *Journal of Entrepreneurship and Small Business*.
- Bosma, N., Acs, Z. J., Autio, E., Coduras, A., & Levie, J. (2009). *Global Entrepreneurship Monitor 2008 Executive Report*. Retrieved from [http://entreprenorskapsforum.se/wp-content/uploads/2010/02/GEM-Global-Report\\_2008.pdf](http://entreprenorskapsforum.se/wp-content/uploads/2010/02/GEM-Global-Report_2008.pdf)
- Brix, U., Hessels, J., Hundt, C., Sternberg, R., & Stüber, H. (2009). *Global entrepreneurship monitor. Unternehmensgründungen im weltweiten Vergleich. Länderbericht Deutschland 2008 [Global entrepreneurship monitor: Enterprise creation in global comparison. Country report Germany 2008]*. Hannover, Nürnberg: Institut für Arbeitsmarkt- und Berufsforschung, Leibniz-Universität Hannover, Institut für Wirtschafts- und Kulturgeographie. Retrieved from [https://www.wigeo.uni-hannover.de/fileadmin/wigeo/Geographie/Forschung/Wirtschaftsgeographie/Forschungsprojekte/laufende/GEM\\_2010/gem2010.pdf](https://www.wigeo.uni-hannover.de/fileadmin/wigeo/Geographie/Forschung/Wirtschaftsgeographie/Forschungsprojekte/laufende/GEM_2010/gem2010.pdf)
- Bronfenbrenner, U. (1981). *Die Ökologie der menschlichen Entwicklung [The ecology of human development]*. Stuttgart, Germany: Klett-Cotta.
- Brüderl, J., & Preisendörfer, P. (1998). Network support and the success of newly founded businesses. *Small Business Economics*, 10(3), 213-225. <https://doi.org/10.1023/A:1007997102930>

- Brüderl, J., Preisendörfer, P., & Ziegler, R. (2007). *Der Erfolg neu gegründeter Betriebe*, 3. erweiterte Auflage [*The success of newly founded enterprises* (3rd ed.)]. Berlin, Germany: Duncker & Humboldt.
- Bühner, M. (2006). *Einführung in die Test- und Fragebogenkonstruktion* [*Introduction to test and questionnaire creation*]. München, Germany: Pearson. <https://doi.org/10.1024/1661-4747.57.3.227>
- De Noble, A. F., Jung, D., & Ehrlich, S. B. (1999). Entrepreneurial self-efficacy: The development of a measure and its relationship to entrepreneurial action. *Frontiers of Entrepreneurship Research*, 73-87.
- Dreyfus, H. L., & Dreyfus, S. E. (1986). *Mind over machine*. Oxford, England: Basil Blackwell Publishers.
- Ericsson, K. A., Krampe, R. T., & Tesch-Römer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, 100(3), 363-406. <https://doi.org/10.1037/0033-295X.100.3.363>
- Fallgatter, M. J. (2002). *Theorie des Entrepreneurship. Perspektiven zur Erforschung der Entstehung und Entwicklung junger Unternehmungen* [*Theory of entrepreneurship: Perspectives on research on creation and development of young enterprises*]. Wiesbaden, Germany: Deutscher Universitäts-Verlag. <https://doi.org/10.1007/978-3-322-95335-3>
- Filipp, S. H. (1990). Ein allgemeines Modell für die Analyse kritischer Lebensereignisse. In S. H. Philipp (Ed.), *Kritische Lebensereignisse* [*Critical life incidents*] (pp. 3-52). München, Germany: Psychologie Verlags Union.
- Filipp, S. H. (2007). Kritische Lebensereignisse. In J. Brandstätter, & U. Lindenberger (Eds.), *Entwicklungspsychologie der Lebensspanne. Ein Lehrbuch* [*Developmental psychology of the life-spans*] (pp. 337-366). Stuttgart, Germany: Kohlhammer.
- Freiling, J. (2006). *Entrepreneurship. Theoretische Grundlagen und unternehmerische Praxis* [*Entrepreneurship: Theoretical foundation and entrepreneurial practice*]. München, Germany: Vahlens Handbücher.
- Fretschner, M. (2014). Ajzen's theory of planned behavior in entrepreneurship education research: An introduction and review of impact studies. In S. Weber, F. Oser, F. Achtenhagen, M. Fretschner, & S. Trost (Eds.), *Becoming an entrepreneur* (pp. 255-285). Rotterdam, the Netherlands: SensePublishers. [https://doi.org/10.1007/978-94-6209-596-0\\_15](https://doi.org/10.1007/978-94-6209-596-0_15)
- Garavan, T. N., & O'Conneide, B. (1994). Entrepreneurship education and training programmes: A review and evaluation. *Journal of European Industrial Training*, 18(8), 3-12. <https://doi.org/10.1108/03090599410068024>
- Gielnik, M., Frese, M., Kahara-Kawuki, A., Katono, I., Kyejjusa, S., Munene, J., Ngoma, M., Namatovu-Dawa, R., Nansubuga, F., Orobia, L., Oyugi, J., Sejjaaka, S., Sserwanga, A., Walter, T., Bischoff, K. M., & Dlugosch, T. (2015). Action and action-regulation in entrepreneurship: Evaluating a student training for promoting entrepreneurship. *Academy of Management Learning & Education*, 14(1), 69-94. <https://doi.org/10.5465/amle.2012.0107>
- Gollwitzer, P. M. (1996). Rubikonmodell der Handlungsphasen. In J. Kühn, & H. Heckhausen (Eds.), *Motivation, Volition und Handlung* [*Motivation, volition and action*] (pp. 209-240). Göttingen, Germany: Hogrefe.
- Gruber, M. (2004). Marketing in new ventures: Theory and empirical evidence. *Schmalenbach Business Review*, 56(2), 164-199.
- Hallowell, R. (1996). The relationships of customer satisfaction, customer loyalty, and profitability: An empirical study. *International Journal of Service Industry Management*, 7(4), 27-42. <https://doi.org/10.1108/09564239610129931>
- Hartig, J., & Jude, N., (2007). Empirische Erfassung von Kompetenzen und psychometrische Kompetenzmodelle. In J. Hartig, & E. Klieme (Eds.), *Möglichkeiten und Voraussetzungen technologiebasierter Kompetenzdiagnostik. Eine Expertise im Auftrag des Bundesministeriums für Bildung und Forschung* [*Opportunities and conditions of technology-based diagnoses of competences*] (pp. 17-36). Berlin, Germany: Bundesministerium für Bildung und Forschung.
- Heckhausen, J., & Schulz, R. (1995). A life-span theory of control. *Psychological Review*, 102(2), 284-304. <https://doi.org/10.1037/0033-295X.102.2.284>
- Heinrichs, K. (2016). Dealing with critical incidents in the postformation phase: Design and evaluation of an entrepreneurship education course. *Vocations and Learning*, 9(3), 257-273. <https://doi.org/10.1007/s12186-016-9151-x>

- Heinrichs, K. (Submitted). Judging critical incidents in the post-formation phase: A matter of entrepreneurial expertise?, *Journal of International Education in Business*
- Klandt, H. (2006). *Gründungsmanagement: Der Integrierte Unternehmensplan: Business Plan als zentrales Instrument für die Gründungsplanung [Start-up management: The integrated enterprise plan: The business plan as the central tool for incorporation planning]*. Oldenbourg Verlag.
- Knott, A. M., & Posen, H. E. (2005). Is failure good? *Strategic Management Journal*, 26(7), 617-641. <https://doi.org/10.1002/smj.470>
- Krueger, N. F., & Carsrud, A. L. (1993). Entrepreneurial intentions: Applying the theory of planned behaviour. *Entrepreneurship & Regional Development*, 5(4), 315-330. <https://doi.org/10.1080/08985629300000020>
- Lang-von Wins, T. (2004). *Der Unternehmer: Arbeits- und organisationspsychologische Grundlagen [The entrepreneur: Work and organisation—Psychological foundations]*. Berlin, Germany: Springer. <https://doi.org/10.1007/978-3-642-18570-0>
- Li ñán, F. (2004). Intention-based models of entrepreneurship education. *Piccola Impresa/Small Business*, 3(1), 11-35.
- Mandl, C., Berger, E. S., & Kuckertz, A. (2016). Do you plead guilty? Exploring entrepreneurs' sensemaking-behavior link after business failure. *Journal of Business Venturing Insights*, 5, 9-13. <https://doi.org/10.1016/j.jbvi.2015.12.002>
- McCarthy, B. (2003). Strategy is personality-driven, strategy is crisis-driven: Insights from entrepreneurial firms. *Management Decision*, 41(4), 327-339. <https://doi.org/10.1108/00251740310468081>
- Minsky, M. (1997). Negative expertise. In P. J. Feltovich, K. M. Ford, & R. R. Hoffman (Eds.), *Expertise in context: Human and machine* (pp. 515-521). Menlo Park, California: American Association for Artificial Intelligence; Cambridge, MA: The MIT Press.
- Misong, M., & Mitnik, S. (2005). *Deskriptive Statistik*. Berlin, Germany: Pro Business.
- Mitchell, R. K., Mitchell, B. T., & Mitchell, J. R. (2009). Entrepreneurial scripts and entrepreneurial expertise. In A. L. Carsrud, & M. E. Brännback (Eds.), *Understanding the Entrepreneurial Mind* (pp. 97-140). New York, NY: Springer. [https://doi.org/10.1007/978-1-4419-0443-0\\_6](https://doi.org/10.1007/978-1-4419-0443-0_6)
- Mitchell, R. K., Mitchell, J. R., & Smith, J. B. (2008). Inside opportunity formation: Enterprise failure, cognition, and the creation of opportunities. *Strategic Entrepreneurship Journal*, 2(3), 225-242. <https://doi.org/10.1002/sej.51>
- Müller, S. (2011). Increasing entrepreneurial intention: Effective entrepreneurship course characteristics. *International Journal of Entrepreneurship and Small Business*, 13(1), 55-74. <https://doi.org/10.1504/IJESB.2011.040416>
- Müller, S., Volery, T., & Von Siemens, B. (2012). What do entrepreneurs actually do? An observational study of entrepreneurs' everyday behavior in the start-up and growth stages. *Entrepreneurship Theory and Practice*, 36(5), 995-1017. <https://doi.org/10.1111/j.1540-6520.2012.00538.x>
- Oser, F., & Volery, T. (2012). 'Sense of failure' and 'sense of success' among entrepreneurs: The identification and promotion of neglected twin entrepreneurial competencies. *Empirical Research in Vocational Education and Training*, 4(1), 27-44. Retrieved from <https://www.alexandria.unisg.ch/publications/215848>
- Peng, M. W., Yamakawa, Y., & Lee, S. H. (2010). Bankruptcy Laws and Entrepreneur- Friendliness. *Entrepreneurship Theory and Practice*, 34(3), 517-530. <https://doi.org/10.1111/j.1540-6520.2009.00350.x>
- Rauch, A., & Frese, M. (2007). Let's put the person back into entrepreneurship research: A meta-analysis on the relationship between business owners' personality traits, business creation, and success. *European Journal of Work and Organizational Psychology*, 16(4), 353-385. <https://doi.org/10.1080/13594320701595438>
- Rosch Inglehart, M. (1988). *Kritische Lebensereignisse—Eine sozialpsychologische Perspektive [Critical incidents—A social-psychological perspective]*. Stuttgart, Germany: Kohlhammer.
- Rost, D. H. (2007). *Interpretation und Bewertung pädagogisch-psychologischer Studien: eine Einführung [Interpretation and review of research in educational psychology: An introduction]*. Weinheim, Germany: Beltz.

- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, 80(1), 1-28. <https://doi.org/10.1037/h0092976>
- Sarasvathy, S. D. (2008). *Effectuation: Elements of entrepreneurial expertise*. Cheltenham, England; Northampton, MA: Edward Elgar Publishing. <https://doi.org/10.4337/9781848440197>
- Shane, S. (2000). Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science*, 11(4), 448-469. <https://doi.org/10.1287/orsc.11.4.448.14602>
- Shepherd, D. A., Douglas, E. J., & Shanley, M. (2000). New venture survival: Ignorance, external shocks, and risk reduction strategies. *Journal of Business Venturing*, 15(5), 393-410. [https://doi.org/10.1016/S0883-9026\(98\)00032-9](https://doi.org/10.1016/S0883-9026(98)00032-9)
- Stinchcombe, A. L. (1965). Social structure and organizations. In J. G. March (Ed.), *Handbook of organizations* (pp. 142-193). Chicago, IL: Rand McNally & Company.
- Unger, J. M., Keith, N., Hilling, C., Gielnik, M. M., Frese, M. (2009). Deliberate practice among South African small business owners: Relationships with education, cognitive ability, knowledge, and success. *Journal of Occupational and Organizational Psychology*, 82(1), 21-44. <https://doi.org/10.1348/096317908X304361>
- Unterkofer, G. (1989). *Erfolgsfaktoren innovativer Unternehmensgründungen. Ein gestaltungsorientierter Lösungsansatz betriebswirtschaftlicher Ordnungsprobleme [Success factors of innovative start-ups: A creativity-oriented attempt at solving ordering problems in business]*. Frankfurt am Main, Germany: Peter Lang.
- Vanevenhoven, J., & Liguori, E. (2013). The impact of entrepreneurship education: Introducing the entrepreneurship education project. *Journal of small business management*, 51(3), 315-328. <https://doi.org/10.1111/jsbm.12026>
- Volkman, C. K., & Tokarski, K. O. (2006). *Entrepreneurship: Gründung und Wachstum von jungen Unternehmen [Entrepreneurship: Founding and growth of young enterprises]*. Stuttgart, Germany: UTB. Welp, I. M., Spörrle, M., Grichnik, D., Michl, T., & Audretsch, D. B. (2012). Emotions and opportunities: The interplay of opportunity evaluation, fear, joy, and anger as antecedent of entrepreneurial exploitation. *Entrepreneurship Theory and Practice*, 36(1), 69-96. <https://dx.doi.org/10.1111/j.1540-6520.2011.00481.x>
- Winther, E. (2010). *Kompetenzmessung in der beruflichen Bildung [Measuring competence in vocational education]*. Bielefeld, Germany: W. Bertelsmann.

## Notes

Note 1. To make the text easier to read, “the entrepreneur” will sometimes be replaced by personal pronouns without gender-specific variation; only the male version will be used.

Note 2. Information about this entrepreneurship education course for students of all subjects at particular German universities can be found at <http://www.5-euro-business.de/>.